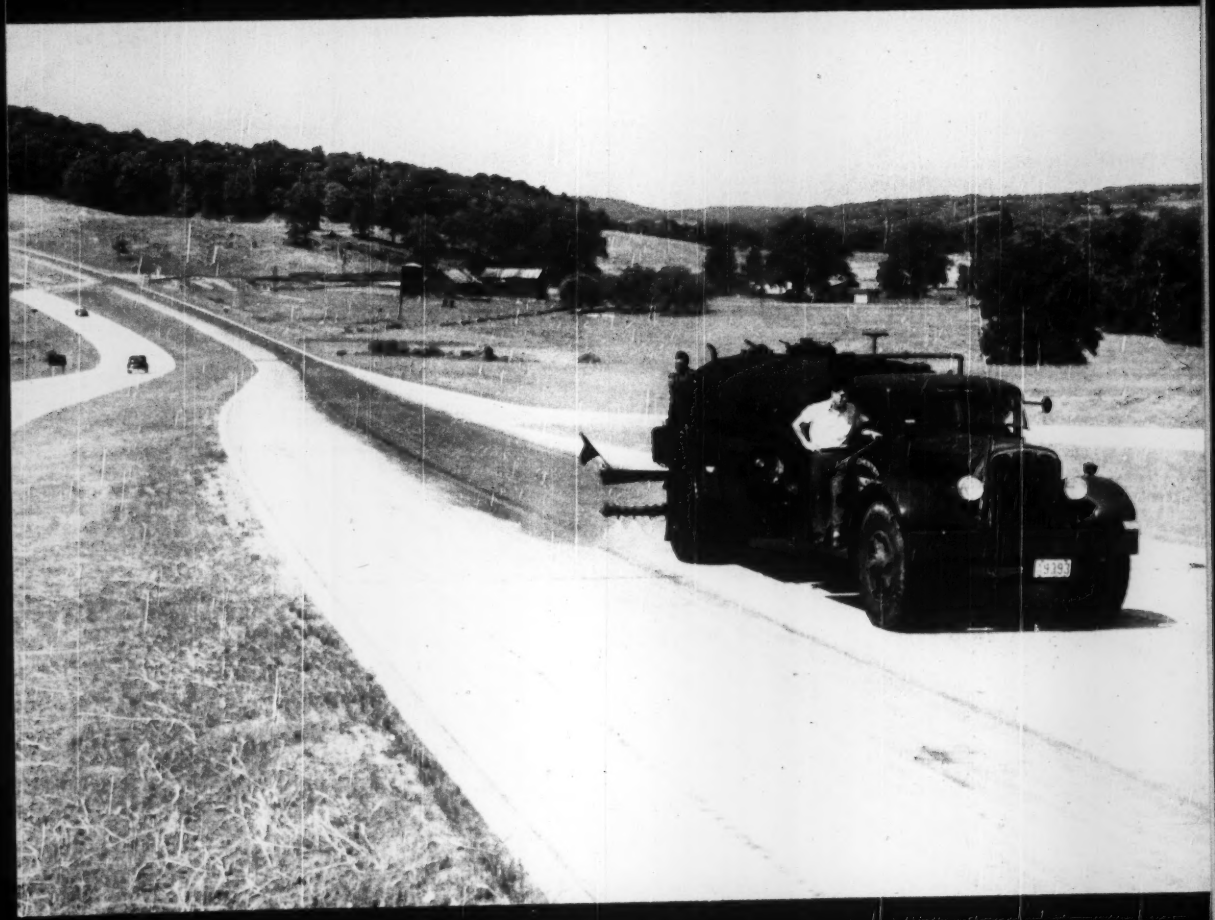
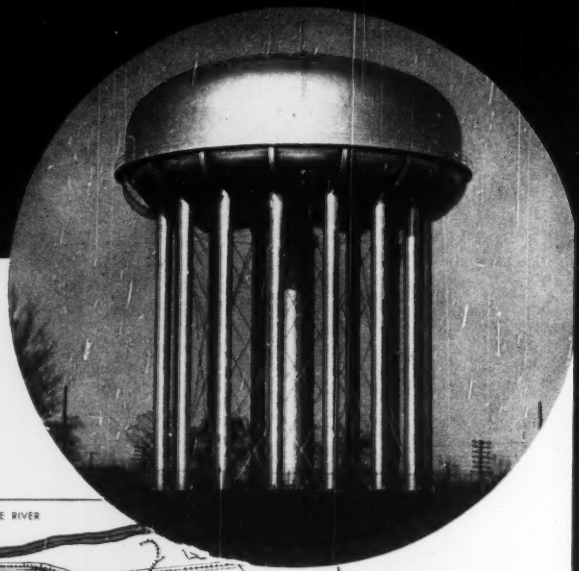
ENGINEERING NEWS-RECORD



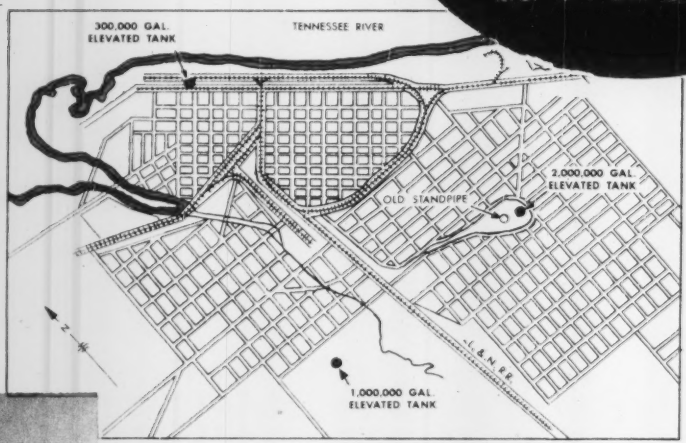
A McGRAW-HILL PUBLICATION

How Decatur gets BETTER water pressure

. . . all over town

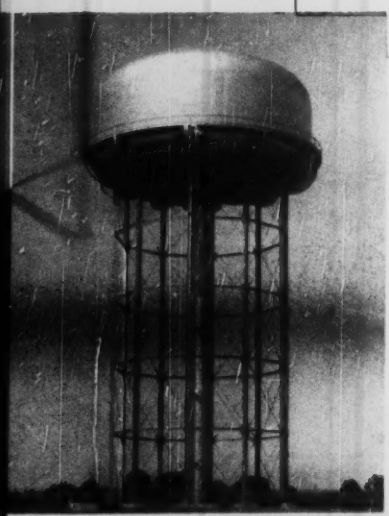


Above: 2,000,000-gal. Horton radial-cone bottom elevated tank erected in 1949. It is 90 ft. to bottom and has a 35-ft. range in head.



Right: Map of Decatur, Alabama, showing location of elevated storage tanks. The Tennessee River is the source of water supply. The total elevated storage capacity in the Decatur system is 3,300,000 gals. All of it is provided by the three Horton tank whose locations are shown on the map.*

Below: 1,000,000-gal. Horton radial-cone bottom elevated tank erected in 1947. It is 108 ft. to bottom and has a 35-ft. range in head.



DECATUR, ALABAMA, has smoothed out pressure variations in its water system by "distributing" storage capacity in *elevated tanks* in different sections of the city. Here is the chronological record of storage expansion: 300,000-gal. Horton* tank, erected in 1925 in north Decatur; 1,000,000-gal. Horton tank, erected in 1947 in southwest Decatur; 2,000,000-gal. Horton tank erected in 1949 in southeast Decatur. (The old standpipe shown on the map has been dismantled.)

What's the effect on pressure? The pressure variation in the distribution mains now has a small range—from 55 to 60 lbs. per sq. in.

More uniform pressures is one of several benefits provided by the Horton elevated tanks at Decatur. Each area now has its own reserve. This reserve can be used to meet peak demands or it can supply water needed for fires and other emergencies. The peak demand aspect is important since the daily per capita consumption rate of the water system's customers has increased over *61 per cent* since 1947. The elevated reserve has also been a factor in the improvement of the city's insurance rating.

Horton* elevated tanks are built in standard capacities from 5,000 to 3,000,000 gallons. Write the nearest office for full details about them.

** Trade name for products built by the . . .*

CHICAGO BRIDGE & IRON COMPANY

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Cleveland, 13. . . . . 2301 Guilford Building
Detroit, 26. . . . . 1506 Lafayette Building
Houston, 2. . . . . 2109 National Standard Building
Kansas City, Mo. . . . . 402 Abrea Building
Los Angeles, 17. . . . . 1511 General Petroleum Building
New York, 6. . . . . 3211—165 Broadway Building
Philadelphia, 3. . . . . 1423—1700 Walnut St. Building
Salt Lake City, 4. . . . . 312 West 17th South Street
San Francisco, 4. . . . . 1335—366 Bush Street
Seattle, 1. . . . . 1312 Henry Building
Tulsa, 3. . . . . 1617 Hunt Building

Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY, and GREENVILLE

In Canada: HORTON STEEL WORKS, Limited, FORT ERIE, Ont.

15

LaPLANT CHOATE MOTOR SCRAPERS *START* *NEW JERSEY TURNPIKE*

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ON CONTRACT 10—RARITAN RIVER TO WOODBRIDGE

5 for GRANDVIEW CONSTRUCTION

ON CONTRACT 9—ALLENTOWN TO RARITAN RIVER

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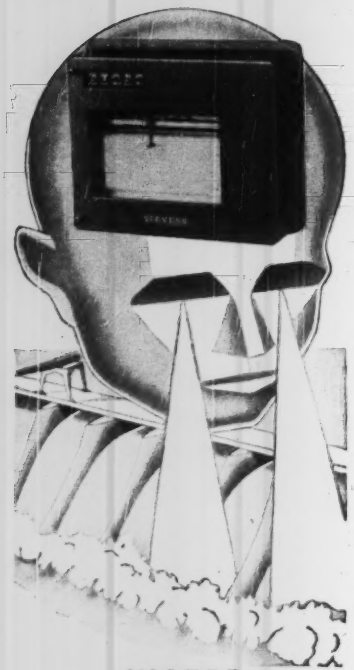
2- and 4-yd. Scrapers for track-type and rubber-tired industrial tractors.

Hydraulic and Cable-operated Dozers.



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ENGINEERING NEWS-RECORD

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Volume 145 AUGUST 24, 1950 No. 8

WALDO G. BOWMAN
Editor

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TIMKEN-DETROIT

TANDEM-DRIVE UNITS HAUL HEAVIER LOADS FASTER • SAFER • AT LOWER COST!

For extra load-carrying ability plus extra pulling power on tough construction jobs, make sure your trucks are equipped with Timken-Detroit Tandem-Drive Units. These rugged units are built for strength and durability and *proved* by years of on-the-job operation. What's more, Timken-Detroit Tandem-Drive Units have a positive *through-drive*—thereby gearing all four wheels to the road. This insures full use of high-powered engines—results in increased tractive ability, faster schedules and reduced operating costs. Parallelogram suspension gives the easiest "ride" ever known.

It will pay you to specify Timken-Detroit Tandem-Drive Units on the next medium- and heavy-duty trucks you buy!

WRITE FOR THIS FREE BOOKLET TODAY!

Shown at right is the Timken-Detroit Model SFD 460 P Tandem-Drive Unit. It is one of numerous models which are ideal for road building, transit-mixed concrete hauling, lumber hauling, excavating work, truck crane and shovel service—wherever the load is heavy and positive pulling power is required.

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A PRODUCT OF THE TIMKEN-DETROIT AXLE COMPANY
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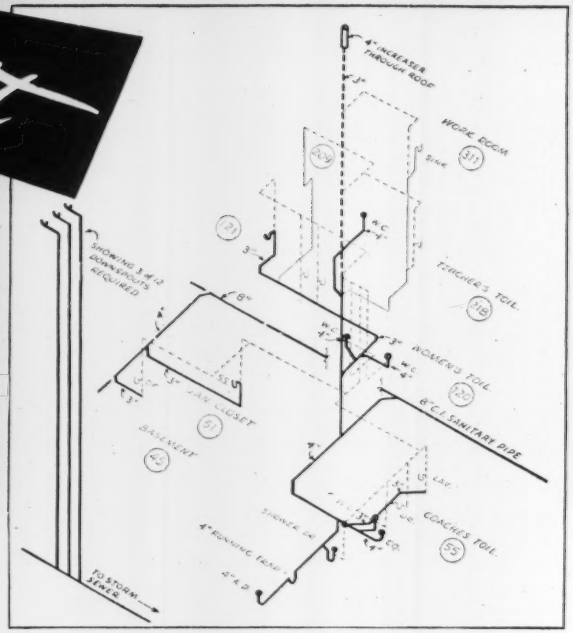
Accepted DA Standard
TRADE MARK REGISTERED

Blueprint

for
Long-Range Economy
with
CLOW "IPS"* (threaded)
Cast Iron Pipe



- ARCHITECTS: Jos. C. Llewellyn Co.
- ENGINEERS: Samuel R. Lewis & Associates
- PLUMBING CONTRACTOR: Robert E. Murphy

Approximately 1500 feet of Clow "IPS"* (threaded) Cast Iron Pipe is now being installed in the new Physical Education and Music Building of the Lyons Township High School, La Grange, Illinois. This corrosion-proof pipe was chosen for long-range economy, as it lasts for a century or more. A section of the original riser blueprint is depicted above, with heavy lines indicating where Clow "IPS"* (threaded) Cast Iron Pipe will serve as vent stacks, waste lines, soil pipe, and downspouts. Also shown is a view of the building under construction, and a view showing how it will appear when completed.

Clow "IPS"* Cast Iron Pipe is available with plain or threaded ends, in 3, 4, 5, 6, 8 and 10" sizes in 18' random lengths. Also furnished with integral caulking bell on one end (other end plain) in 18' random lengths, and 4, 6 and 8" sizes.

*"IPS" is iron pipe size O. D.

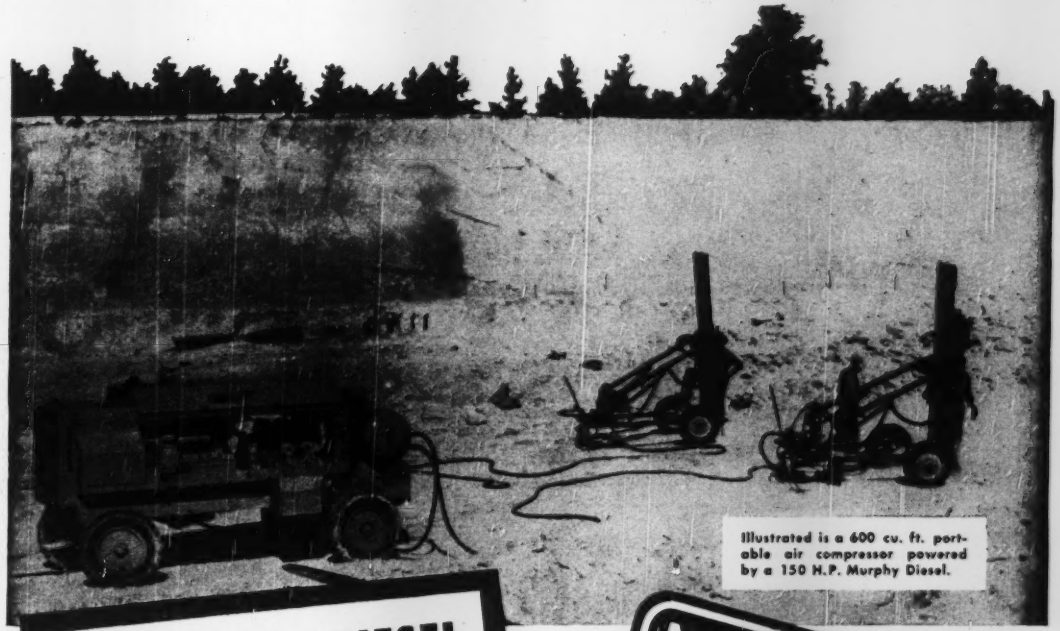
CLOW "IPS" CAST IRON PIPE CAN BE

on the job, with ordinary tools of the piping trade.

JAMES B. CLOW & SONS
201-299 North Talman Avenue • Chicago 80, Illinois

and their National Cast Iron Pipe Division, Birmingham, Alabama; subsidiaries Eddy Valve Co., Waterford, New York; Iowa Valve Co., Oskaloosa, Iowa

When working against time...



Illustrated is a 600 cu. ft. portable air compressor powered by a 150 H.P. Murphy Diesel.

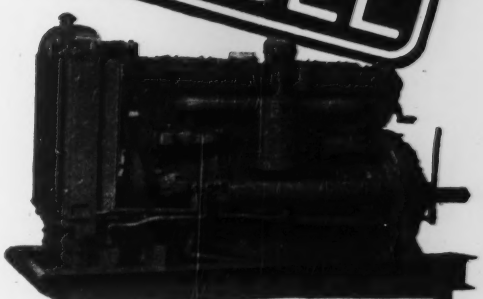
...MURPHY DIESEL dependability really pays off

RELIABILITY with a minimum of down time is one of the most important factors in making a job profitable. And that's the kind of power you get with Murphy Diesels. Instantaneous starting, at over 100° or below zero, puts Murphy Diesels on the job immediately. Simple design and heavy duty construction enables them to stay on the job longer.

Murphy Diesel dependability plus fuel economy that is *unmatched by any other engine* of comparable power, gives you the kind of power that pays off in lower costs and bigger profits. Check up now, and find out what Murphy Diesel Power can do for you. Call your Murphy Diesel Dealer or write direct.

MURPHY DIESEL COMPANY
5311 W. Burnham St., Milwaukee 14, Wisconsin

MURPHY DIESEL

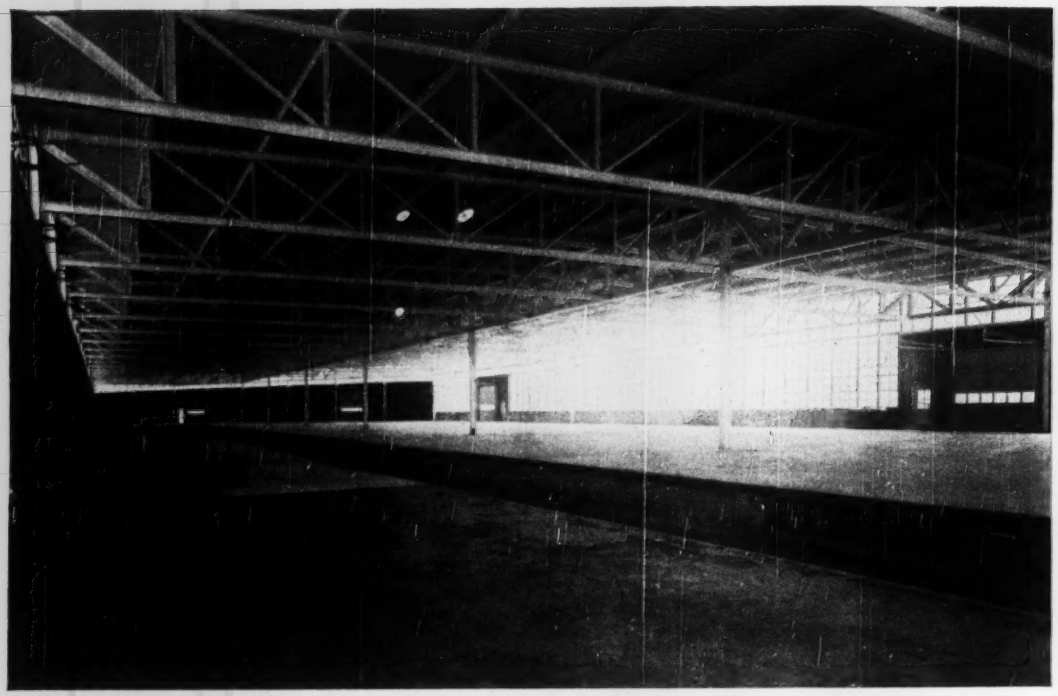


Heavy duty power

for construction

Murphy Diesel Engines and Power Units for construction, 90 to 220 H.P. Generator Sets, 60 to 133 K.W.

Arc-welded framing provides better building values



This modern shipping department of New Idea Division of Avco Manufacturing Corporation, Coldwater, Ohio, well-known producers of farm machinery, is 120 ft. wide by 150 ft. long. Aisles are 60 ft. wide, employing Austin's H-section all-welded trusses. Bay spacing is also 60 ft. with two intermediate columns eliminated. This design provides an unusual degree of flexibility for plant layout.

By GEORGE A. BRYANT, *President*
The Austin Company
Engineers and Builders
Cleveland, Ohio

ARC welding has made it increasingly practical and economical to design manufacturing plants that can be adapted readily to the ever-changing needs of industry.

In our own experiences over a period of 20 years, welded designs have saved many thousands of tons of steel as well as countless man-hours in the drafting room, in the shop and in the field. Welded designs have also provided our customers with *better structures* . . . affording unobstructed areas with high headroom and good, natural lighting and with streamlined surfaces that are good looking and easy to maintain.

Arc welding gives our engineers greater freedom of design to more adequately meet the needs of our customers. For example, because of the development of our H-section truss, building owners are now free to locate materials handling equipment and other suspended loads wherever required, usually without the need for special design. These structural units of standard lengths are fabricated on a mass-production basis.

In developing the full benefits of welded construction, close cooperation between engineering, fabrication and field erection is essential. Advantages thus realized are in the form of dollar savings, speed of construction, improved appearance or greater flexibility of usage. We find that all four advantages usually result.

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Write for Studies in Structural Arc Welding
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MORE HORSEPOWER
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10-15% more torque at normal speeds—smoother, faster operation.

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Quiet, smokeless exhaust . . . less vibration, less gear shifting . . . reduces operator fatigue.

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Improved combustion, more power per gallon of fuel—less oil dilution, fewer oil changes.

PICK BUDA POWER FOR PROFIT!

6 DAS-844
280 H. P.

6 DA-779
185 H. P.

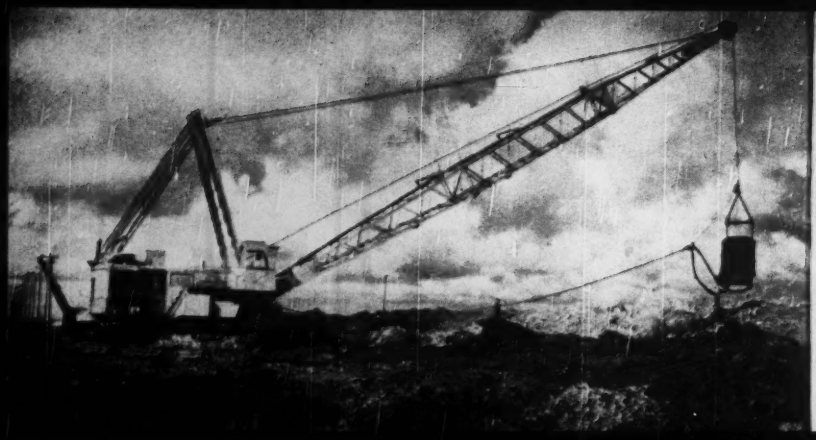
3 NEW DYNA-SWIRL DIESELS

6 DA-844
215 H. P.

Buda's powerful new Dyna-Swirl Diesels are again proving to construction men that "Buda Power is Profitable Power." Increased power, reduced fuel and lube oil consumption plus less downtime and longer engine life are the advantages and the "competitive edge" you get when you're powered with the new Buda Dyna-Swirl Diesels.

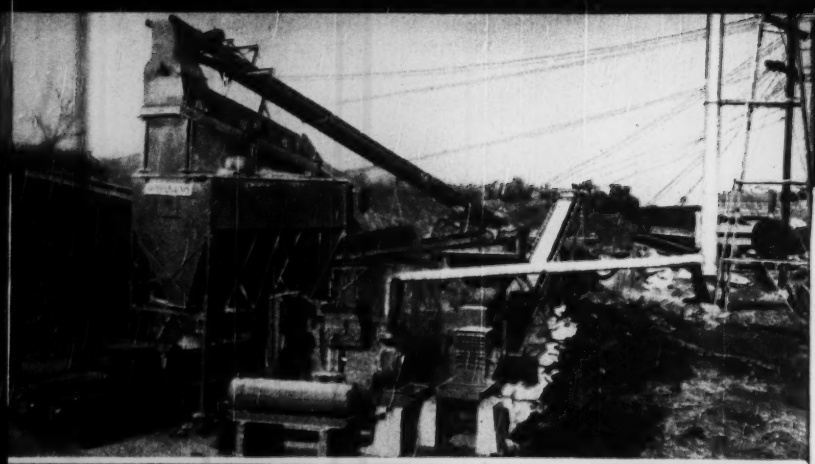
DON'T DELAY! Learn about new Buda Dyna-Swirl Diesel power now. Your nearby Buda Distributor can give you the complete story, or write for circulars and full data. The Buda Company, Harvey, Illinois.

BUDA

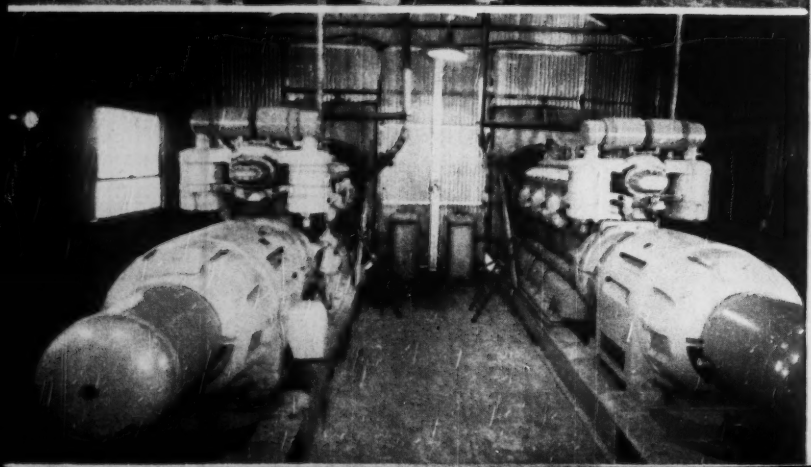


A D386 "Cat" Engine powers this Manitowoc dragline, with 6-yd. bucket and 120-ft. boom, building levee on Galveston Bay. Owned by McGinnes Bros. Construction Co., Houston, Texas.

"Cat" Engines BUILT



This crushing plant, owned by Arthur R. Alvis, Butler, Mo., has a "Caterpillar" D375 Engine driving a Universal pulverizer. Capacity, 125 tons of road rock per hour.



Two "Cat" D397 Electric Sets, each with capacity of 314 kw., furnish light and power for Cedar Bluff Dam construction job. Contractors, Lytle-Amis & San Orr, Ellis, Kans.

BACK of the high preference for "Caterpillar" power on construction jobs is a long experience of profitable operation.

Construction men know they can depend on steady, day-in-day-out performance from "Cat" Engines and Electric Sets. And they know they'll get 24-hour service—anywhere—from "Caterpillar" dealers.

The right power for every type of job is now available in the complete "Caterpillar" line. There are ten Engines, ranging in size up to 500 hp. (maximum), and ten Electric Sets, up to 314 kw. (12-hour duty).

Over 150 manufacturers make "Cat" Engines available as power for their equipment. They know that quality power adds to the performance of their product —gives greater satisfaction to the user.

When you order new construction equipment, specify "Cat" Diesel power. Your "Caterpillar" dealer will be glad to *show* you how the big yellow machines will meet your requirements.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

FOR CONSTRUCTION MEN

LOOK UNDER THE HIDE

for the quality that pays off in performance!

The built-in quality of "Caterpillar" Diesel Engines doesn't show on the outside—but it shows up in performance. Just take a few examples of the hundreds of hidden quality features that give "Cat" Diesels their long life and dependability.

"Caterpillar" intake and exhaust valves are made of highly alloyed, heat-resistant steels. Their ample size and close machining and heat-treat specifications have resulted in thousands of hours of trouble-free valve operation. Valve and rocker arm design are matched to reduce wear. Valves in the D397, D386, D375 and D364 Engines have special hard facings on contact surfaces, and have valve rotators and hardened valve seat inserts to reduce seat wear.

Fuel pumps are "Caterpillar"-designed and "Caterpillar"-built. Made of the cleanest high-chromium, high-carbon alloy steel obtainable, the pump plungers and barrels are diamond lapped. Pumps are heat treated to maximum hardness to give users thousands of hours of trouble-free, economical service. There is an individual pump for each cylinder. Pumps are free from adjustment and interchangeable.

The fuel injection valve offers owners maximum simplicity in design. Machined to extremely close limits, these valves are made from the finest quality materials — and are subjected to very detailed hardening processes. Valves are completely interchangeable and are adjustment-free. A large single orifice minimizes fouling. With the matched design of valves and precombustion chambers, owners use low-cost, non-premium fuels to get top economy.

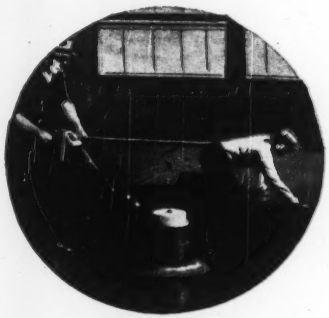
CATERPILLAR

DIESEL ENGINES · TRACTORS · MOTOR GRADERS · EARTHMOVING EQUIPMENT

For Service and Safety...

Re-Floor with Flintkote

Patching...Resurfacing...complete New Surfacing is quick and easy with cold-laid asphalt mastic mixtures.



You cut cost three ways when you repair or re-floor using Flintkote Flooring Emulsions.

Installation is fast. This means a minimum of preparation to apply and a saving in time loss through interruptions of operation. Mastic made with Flintkote Flooring Emulsions can be hand finished or power floated and opened to normal traffic in as little as 48 hours.

Maintenance is minimized. The resilient qualities of these floors make them truly heavy duty. They absorb shock from heavy loads. They do not require joints. And traffic irons out minor cuts or bumps. Patches may be featheredged.

Service life is long and pleasant. You'll get years of trouble-free service from Mastic made with Flintkote Flooring Emulsions. And a bonus of employee satisfaction goes with it, because these floors offer a comfortable surface on which to work. They're resilient and quiet . . . serve to insulate against cold floors.

So, don't fail to specify Flintkote Flooring Emulsions whether purchasing for your own use or letting a contract, and thereby obtain the floor that gives you top quality . . . while it saves you money. Comprehensive literature is yours for the asking.

THE FLINTKOTE COMPANY *Industrial Products Division*
30 Rockefeller Plaza, New York 20, N. Y.
Atlanta • Boston • Chicago Heights • Detroit • Los Angeles
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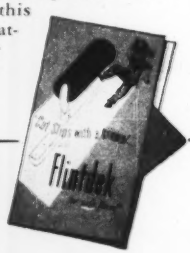
FLINTDEK MAKES SLIPPERY SURFACES SAFER!

Whenever slippery floors create a hazard, cut the risk with Flintdek.* This popular oil and grease resistant, anti-slip floor coating is now available in Cement Gray, Slate Gray, Visibility Yellow, Tile Red and Green.

Properly applied by trowel to almost any clean, rigid surface . . . Flintdek will not chip or peel. And areas such as ramps, platforms, steps, around machinery and pools are far safer places to work when surfaced with this durable, anti-slip coating. Write for folder and free applied sample.

*TRADE MARK



FLINTKOTE *Products for Industry*

NEWS BRIEFS

No Holdup Yet—HHFA Administrator R. M. Foley has announced that activity under the slum clearance provisions of the 1949 Housing Act will proceed as planned for the present, despite the Korean war. So will the housing construction program, except that it will be limited to 30,000 starts this year. No construction could start this year under the slum clearance program, nor could any substantial volume of such work be achieved before 1952, Foley pointed out.

Whose Are?—Michigan roads aren't up to what would be required of them if a lot of war traffic developed, according to Highway Commissioner C. M. Ziegler. Money's the problem. The state could get $17,000,000 in federal grants—if it could find the matching funds.

Big Pumps—Assembly has begun of the pumps which will lift water from Lake Roosevelt, behind Grand Coulee Dam, 280 ft into the Grand Coulee equalizing reservoir, whence it will feed an irrigation system. The world's largest, these pumps will be vertical-shaft, single-stage centrifugal units, each direct-connected to a 65,000-hp electric motor.

Build Another One—Cuyahoga County, O. (Cleveland), is spending $3,250,000 on a new administration building which turns out to be too small even before it's built. Two of three agencies which won't be able to get into the new structure would require alone more than one-third of the space that will be available.

Let's Get Started—Washington state's legislature will be asked next year to enact legislation facilitating proposed bridge construction across Puget Sound west of Seattle. Estimated cost is $50,000,000, which would be repaid from tolls.

Blue Chip Deal—Ohio's considering the possibility of getting state buildings erected by inducing private capital to build to state specifications, then rent to the state on a long-term lease-purchase agreement. A California court recently validated lease of state lands for such purposes. If it works out in Ohio, construction probably would be undertaken in Cleveland, Columbus and Cincinnati.

Worm Turns Dept.—Zoning disputes involving industrials and home owners generally find the latter seeking pro-

HOW DO *YOU* FIND BEDROCK?

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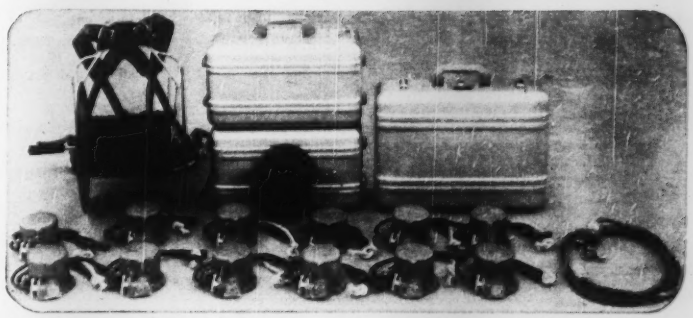
with **CENTURY CONSTRUCTION SEISMOGRAPH**



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tection from encroachment by the former. Not so in Indianapolis. There, groups interested in preserving the dwindling industrial sites in the city have been fighting off home owners, who've been tending to build around new plants. Council will get a proposal to ban residential construction in areas zoned for industrial use.

So Don't Speed—Pennsylvania Turnpike Commission will equip its 327-mi, cross-state highway (166 mi still under construction) with the most modern radio communication system it can get. Interchanges, maintenance buildings, tunnel portal buildings, police, maintenance and commission headquarters, patrol vehicles and emergency trucks all will have two-way sets. The net will be split at Everett, midway in the road, with the relays possible there. The system will operate through a chain of unattended microwave relay stations.

Fish Gotta Swim—Washington state may use gas tax funds to provide fish protective facilities on culverts under roads, the attorney general has ruled. Counties or the highway department are responsible for maintaining works so fish can reach upstream spawning grounds.

New tunnel at N. Y.?—The Port of New York Authority is carrying on a comprehensive survey of traffic at the New York and new Jersey approaches to the Lincoln Tunnel under the Hudson River. The purpose is to determine what relief would be afforded, and to indicate what approach changes would be inquired in the event of the construction of a third tube to the tunnel. An engineering study is also being made.

Gathering specialists—An effort to list the services of technical experts in larges scale construction design—for U. S. use, if need be—is being made by a recently formed emergency committee headed by Roy F. Larson, Philadelphia architect. The American Society of Civil Engineers is interested in the plan.

Connecticut studies roads—Connecticut's State Highway Department and the Federal Bureau of Public Roads have begun a joint survey of state highway maintenance methods. It is to be concentrated in the Warehouse Point area, above Windsor, an area chosen because of the wide range in roadway types. Purpose will be the more efficient use of trucks, graders, oilers and other equipment. Road sanding operations will be studied and the four seasonal cycles will be covered.

Lower Excavation Costs

Substantial savings in excavation costs are often possible with Transite* Sewer Pipe because of its high flow capacity. This often permits the use of flatter grades and shallower trenches. This is a particularly important advantage where the pipe must be laid at or below the ground water line or where rock excavation is involved.

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Made of asbestos, cement and silica combined into a homogeneous material of great stability, Transite Sewer Pipe is corrosion-resistant both inside and outside. Tight joints safeguard against root trouble. And every Transite length is factory-tested for strength and uniformity. This adds up to low maintenance costs through the years.

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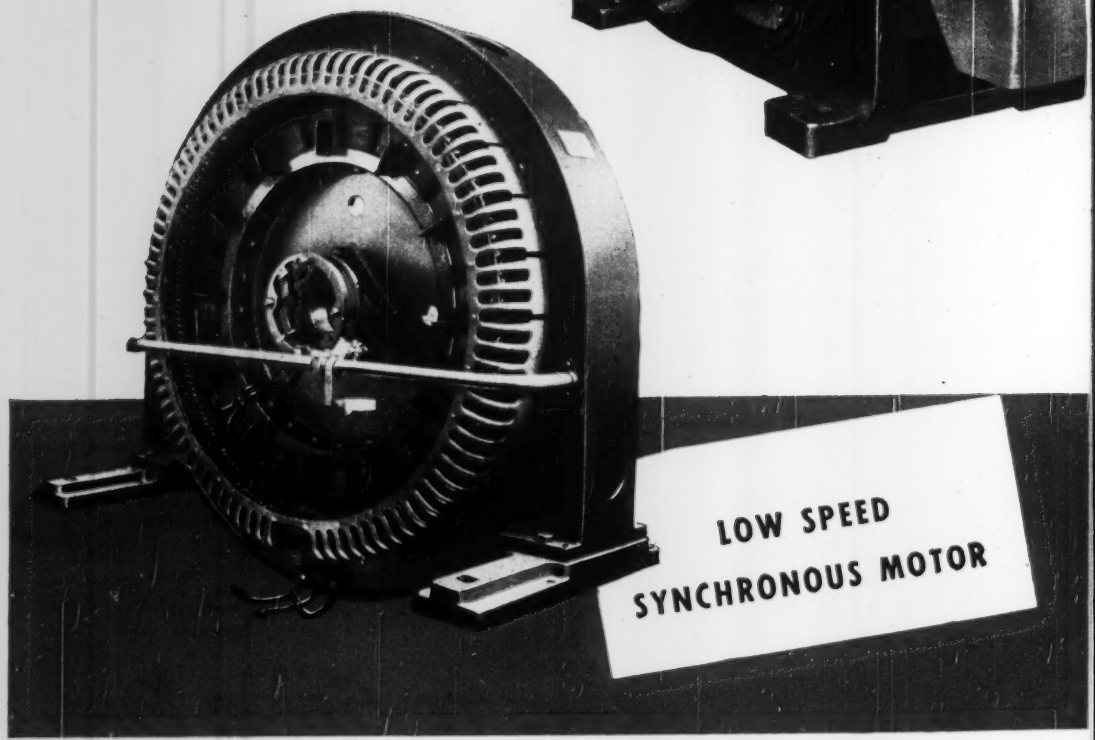
SAVE ON POWER BILLS



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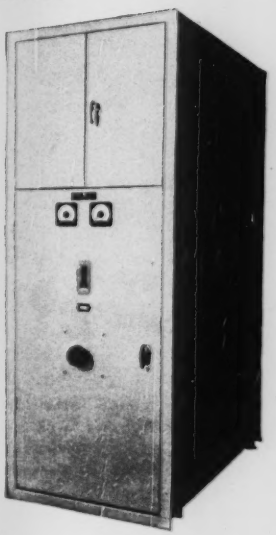
G-E synchronous control provides the accurate adjustments that enable you to improve power factor. Here's where details count—where the slightest variation of a pointer on a meter means money saved—or lost. And General Electric has not overlooked these elements. Consider the meters for a moment. Here, G-E has devised a long scale with the pointer in the same plane as the figures so there can be no possibility of misreading the instrument. Anti-glare glass is used so no distortion is possible.

The new smaller rheostat, too, has design features that not only result in longer life but in greater operating convenience and accuracy. The handle has been molded to fit the fingers of the operator—to prevent slippage and over correction. You can be sure, too, that the new field circuit will respond instantly to rheostat adjustment.

Protection is assured the operator through the attractive steel enclosure. The cabinet resists blows, keeps out dirt and other operating hazards. All live parts are strongly guarded. Plant appearance is improved with this control designed to line up with other G-E power units such as switchgear. Ask your nearest G-E office for more information about this equipment that safeguards your investment . . . helps save operating expenses.



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35-TON TOURNAROCKERS Speed Stripping for Bagdad Copper

Hauling up 10% grades ...loads weigh 37½ tons

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Each LeTourneau rock wagon is loaded with 6 to 7 passes from the 4-yd. dipper in less than 2 minutes . . . and, according to actual weight test, loads carried average 37½ tons. Hauling these oversize loads along narrow benches . . . down 10½% grade for 450' . . . then, up 660' at 10%, each Tournarocker averages a 4510' cycle every 11.2 minutes, including load, haul, dump and return. Giant, 4-wheel air brakes, and positive electric power steer let operators haul in 3rd gear with complete confidence and safety. On the 10% mine grades, Tournarockers climb easily in second, with full loads. Pull is exceptionally smooth because of power-proportioning differential, which automatically delivers 4 times the power to drive wheel on firmest footing.

On the spoil bank, these husky haulers also show a lot of speed advantages. 90° turns give fast, easy spotting. Power on front drive wheels lets Tournarocker back up clear to edge and dump over bank . . . eliminates most clean-up. Simple electric hoist raises body to vertical position . . . smooth, streamlined bowl clears 37½-ton loads in an average of 38 seconds, total hoist and dump time!

Sizes: 50, 35, 16, 9 tons

Like Bagdad Copper Corp., it will pay you to investigate the big tonnages and new low costs possible with these revolutionary haulers. Your LeTourneau Distributor has all the facts . . . call him for more information on 50, 35, 16 or 9-ton Tournarockers TODAY.

PUTS LOAD OVER EDGE OF BANK
In dump position, back end of Rocker body rests on edge of bank below rear wheels, loads dump clear. Big four-wheel air brakes hold rig on firm footing.

BAGDAD COPPER ALSO USES TOURNADOZER
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CONSTRUCTION TRENDS

THE BUSINESS OUTLOOK

Going into the third month of the Korean war, American business is already deep in the problems of inflation.

Any parallel with 1940-'41 is out of gear. As far as defense production goes, the U. S. has just begun to step up its effort. It is in roughly the same place it was in early 1940. It will still be a year before defense production gets rolling in volume.

But the inflationary problem is much the same as we had in late 1941—just before the government found wage stabilization and general price freezing necessary.

The first surge of price increases that came after Korea is already tapering off. Wholesale prices on the average jumped five percent during July. Some, of course, jumped much more rapidly. But construction materials, by ENGINEERING NEWS-RECORD reports from 20 major cities, went up less. Lumber, which gained most spectacularly, was up 4.5%, others less.

Now the rise in wholesale prices is tapering off. But they are still going up about one percent a month. And prospects are that they'll continue to rise steadily at about that rate through 1950.

Moreover, the jump in wholesale prices—which include many basic materials—is being translated into higher industrial prices much faster than it was before World War II. Then industry generally held the line on its prices.

Recently, however, electrical equipment has been marked up 8% to 10% by a broad range of companies. Tractors and some types of construction machinery have gained 8 to 10%. Smaller industrial tools—forged steel wrenches, plumbing specialities, power equipment lines—are reported up 5% to 12%.

Retail prices, too, are headed upward. Food prices jumped immediately after Korea. Meat led the parade—and is expected to continue upward under the pressure of rising demand from housewives. The cost of living is once more moving upward, probably will rise steadily, although fairly slowly.

Speed with which prices have risen has surprised Washington economists. Part of it was due to the surge of war-scare buying following Korea. Department store sales, although they have dropped back since, jumped 45% above the level of a year ago in mid-July. Part of the gain in prices reflects higher costs of labor and materials—which had been rising since January. But a major part of it was due to fear of controls. Businessmen wanted to get prices up before a general freeze on prices could go through.

Companies in a wide range of lines—steel, chemicals, appliances and others—are again allocating their production. Backlogs are growing and, in some cases, companies are refusing to take on new customers. Black markets in steel revived overnight—with some sheet steel going at double mill prices.

MANPOWER HEADACHES

Looking ahead, manpower looms as the major problem for business in the next six months. Construction labor is already tight in many areas. Prospects are that next year the problem will be worse.

Manpower will be much tighter in months ahead than it was before World War II. Then, we had more than eight million unemployed—and reserves of women and of youngsters and old-timers who could be drawn into the labor force.

Today there are probably less than three million people looking for jobs. Probably not more than one and one half million could be drawn from that pool now.

There are also about 17 million women working now—against 12 million before World War II. Many of the women who are not working now, too, are at home taking care of children. The booming birthrate of the last five years means that more mothers are tied to their homes now than were ten years ago.

Finally, comparatively few youngsters will be joining the labor force in the next few years. The depression—with its low birthrate—is catching up with us.

In short, business can't count on recruiting from those reserves to the extent it did in 1940 to 1944.

Skilled labor promises to be the most critical shortage. The defense services are reaching into industry now to pull out trained reserves on a far greater scale than they could in 1940. Then the Army and Navy reserves were small. This intensifies the shortage of skilled people—promises to make it one of business' key problems in the next year.

There'll be little help from Washington on these problems in the months ahead.

Today Washington is waiting for the legislation and executive orders that will start wheels rolling. But even after Washington begins to mobilize its controls, it will be months before much can be done. Prospects are for some limits on uses of key materials—notably rubber—in the next month or so.

Voluntary allocations and priorities on materials—first on steel and non-ferrous metals—will be next. Some key materials, too, will be put under price ceilings. But, as things look, it will be year's end before the government could begin to fix prices and wages and to ration production on a broad scale.

Contractor trims $19,000 on a single bid

The successful bidder on more than 22 miles of highway sub-drainage for an Eastern State figured the job two ways. First, he bid the job with short section, rigid pipe. Then by figuring an alternate bid using ARMCO Corrugated Metal Pipe he was able to reduce his original estimate by more than $19,000.

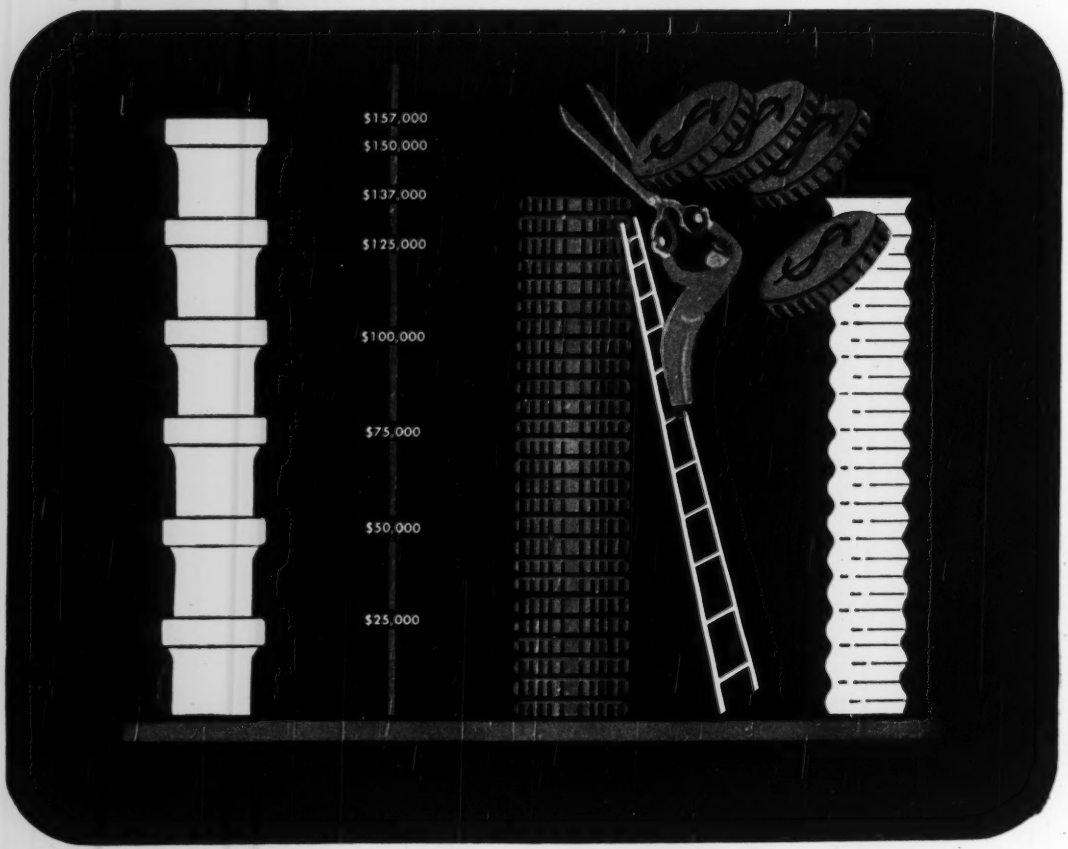
No wonder more and more experienced contractors are being awarded desirable contracts with bids based on ARMCO Corrugated Metal Pipe. Figured on an ***installed*** basis, this pipe saves money in many ways.

Although amply strong, ARMCO Pipe often weighs only one-tenth as much as more massive types. This means low handling and hauling costs. Job costs go down because unskilled labor quickly makes the installation. There is no breakage, no curing, no delay.

Individual lengths of ARMCO Pipe are supplied in any length that can be hauled or handled. No large and expensive equipment is needed for installation. A few men with a rope sling or a small A-frame can handle the largest structure. Connections are made with simple band couplers and there are no bells or massive joints requiring hand excavation.

Bid low with adequate profit by figuring that next job with ARMCO Corrugated Metal Pipe. You will find it ideal for highway, railway, airport and municipal installations. Write for complete data. Armco Drainage & Metal Products, Inc., 2835 Curtis Street, Middletown, Ohio. Subsidiary Of Armco Steel Corporation. Export: The Armco International Corporation.

ARMCO DRAINAGE STRUCTURES



THE CONSTRUCTION WEEK

INDUSTRIAL EXPANSION UP?—The insiders are sure that plans for a rapid expansion of industrial capacity are in the making within the Administration, and will unfold as the defense program gets rolling. The goal will be a 30% increase in goods and services in the next five years—which would mean total output would go from the current $270 billion per year to about $350 billion. The theory: This kind of expansion is what is needed to meet extra military needs without too much strain on the civilian economy. Topping the expansion list is steel (ENR August 3, p 23), which now plans a 6% capacity rise, but which the Administration thinks should lift itself by 15 or 20%. Other items will be other metals, electric power, some finished products. To help, the government probably will ease off on credit restrictions, perhaps on depreciation rates—all of which could combine into an outlet for considerable construction capacity.

POWER MOBILIZATION—In line with any power expansion projects, the Interior Department is now laying plans for defense mobilization of electric power—even though formal assignment of electricity to the department hasn't been made. The "mobilization" (as Interior plans it) will shape up this way: Secretary Chapman would be power czar, setting up a new office in the department headed by a sort of a deputy power administrator. Then there'll be a conference of representatives of all segments of the field, and then an advisory council, that will make specific recommendations on what power is to be alloted for steel, aluminum, etc. Needless to say, the prospect of such controls in the Interior Department stirs no enthusiasm among the private utilities.

AND CONTROLS—With these moves will come controls. It may take Congress another week to put in the final commas in the control legislation it started a month ago—but once that's done, some controls will be here within a couple of weeks. There's this to be noted in the control bill: As now written, it gives the President all the powers Roosevelt ever had, including price control and rationing. The outlook, though, is still for limited use of the powers granted. There's no thought of broad regulations unless there's an all-out war. Rather, there will be a step-by-step control, starting with critical materials for the military steel, rubber, copper), then on other things.

BUT NO MANPOWER—Washington hasn't done anything on non-military manpower problems, even though the talk of general controls (see above) has revived talk of a manpower draft—if and when needed. Observers think nothing will be done yet: Congress will have great difficulty persuading itself to draft men to work for someone else—it smacks of peonage, and probably could not be enforced except under conditions of dire emergency.

FOR SALE—A poignant reminder of the many types of hazards that beset construction firms comes from Pittsburgh this week. Booth & Flinn, one of the country's famous contracting organizations, is to pass from under the management that has made three-quarters of a century of construction history. Because of an inheritance tax bill, Booth & Flinn is for sale for about $3 million. When A. Rex Flinn died three months ago at the age of 65 he left the company to his daughter along with the rest of the estate. Selling the company, which is said to be in excellent financial shape with $7 million of contracts on its books, has been judged the best way to satisfy the tax charge. Booth & Flinn built three sections of New York's Catskill Aqueduct, the Holland Tunnel, the Liberty Tubes and the Westinghouse Bridge in Pittsburgh, many industrial plants.

NEW YORK THRUWAY COSTS RISE—Construction costs on New York State's 486-mile Thruway are running close to $600,000 a mile, according to Bertram D. Tallamy, superintendent of the state's Department of Public Works and chairman of the Thruway Authority. The 13 miles recently opened to traffic cost $7,298,871, or $560,000 per mile. Another 32 miles under contract will cost $17,000,000, or about $530,000 a mile. This work is all in regions where no unusual construction difficulties are involved, indicating that costs elsewhere will be much higher. In view of this, Mr. Tallamy states that the original estimate of $450 million for the entire project is low.

TOLL BRIDGE BOOKS BLACK—Despite lack of easy access, poorly marked entrances and other troubles, Boston's Mystic River Bridge was rated "in the black" in June. With an average of 29,500 cars crossing the structure daily, the Mystic Bridge Authority figures it can start building up a sinking fund to pay off its $27,000,000 bonded indebtedness, meanwhile hoping the traffic will reach the expected 37,000 vehicles daily. In New York too, a new toll venture was booming. The Brooklyn-Battery Tunnel had, in its first five weeks, revenues 35% and traffic 32% in excess of pre-opening estimates.

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ADVANCE-DESIGN TRUCKS

POPULARITY LEADERS Chevrolet trucks are the favorites by far! In every postwar year truck users have bought more Chevrolets than any other make. And that's proof of the owner satisfaction they have earned!

PERFORMANCE LEADERS Chevrolet trucks give you high pulling power over a wide range of usable road speeds . . . cut down total trip time with high acceleration on the straightaway.

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Chevrolet Advance-Design trucks have everything it takes—and plenty to spare. Rugged construction to withstand the wear and tear. Handling ease and comfort to lighten the load of a day's work. And more power than ever! Two great Valve-in-Head engines—the Loadmaster 105 h.p. and the Thriftmaster 92 h.p.—make these the most powerful trucks Chevrolet has built! Yes, these new jobs bring you peak value—and at a low price. They cost surprisingly little to buy, to run and maintain. That's why Chevrolet trucks outsell them all!

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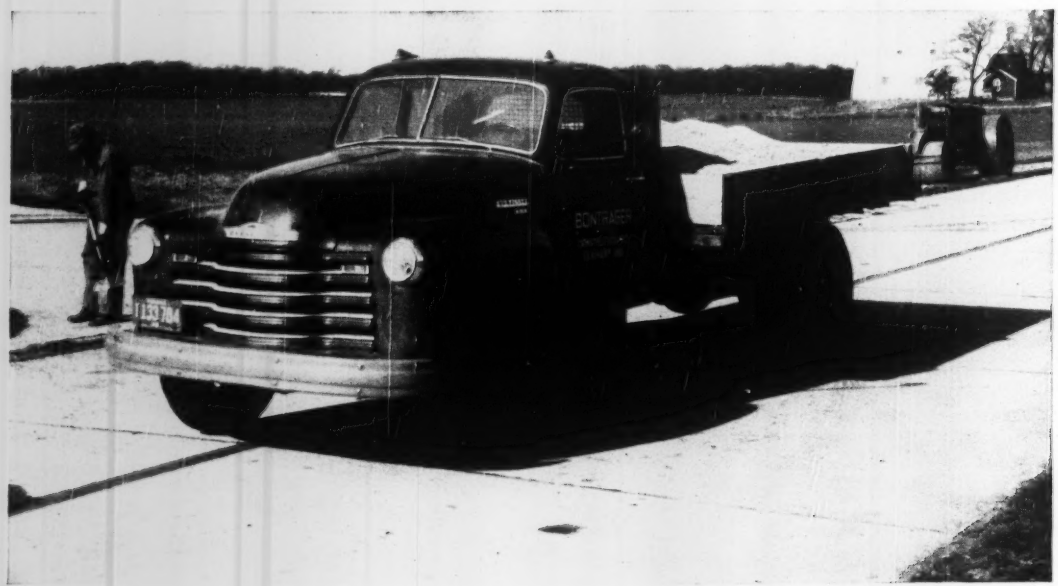


Assuring Safer Highways

TRAFFIC COURTS in Minnesota are giving whole-hearted support to the State Highway Department's safety program. In one month, earlier this year, 1,530 motorists in that state forfeited their licenses for violations of traffic laws. Of these, 1,139 had their licenses suspended and 391 were outright revocations. Most of the latter resulted from convictions for driving while under the influence of intoxicants.

No amount of safety built into highways will protect the public against drunken or irresponsible drivers. The only protection against them is to keep them off the roads. Today, with the rapidly mounting volume of traffic, there is greater need than ever for strict control over dangerous drivers. Such control can only be assured in states where the courts stand squarely behind the traffic officers.

The Place of Technical Institutes

TECHNICAL INSTITUTES expanded greatly in number and in student enrollment during World War II, because we needed more technicians. But as a result, the schools occupy a much more prominent place in our educational system today. As we enter another period of war demands, it is important that this system be tuned to the times.

Up to the present time, for example, little thought has been given to the relation of technical institutes to our engineering schools. Much the same can be said about the engineering courses in the growing number of junior colleges. These considerations give special pertinence to the comment on these two groups of schools by Thorndike Saville, retiring president of the American Society for Engineering Education at the society's annual meeting. Dean Saville called for a comprehensive study of the possibilities for changes in the courses taught in technical institutes and junior colleges in order to relate them more closely to courses in the engineering schools.

The only point of close contact between the technical institutes and engineering schools at present is in accrediting by the Engineers' Council for Professional Development, which was sought by some of the better institutes following the war and now is well established. But even that accrediting was undertaken by ECPD not so much as a means for integrating the two grades of schools as it was to insure that the institutes stayed within what then appeared to be a well defined field—training technicians for engineering industries. The educators on ECPD did not want the institutes to develop into second-rate competitors.

Yet despite that effort, the competition is growing. Its worst aspect is that its victims are the young men who are led to believe that they are getting the equivalent of the first two years in an engineering school—or even a complete engineering course—in the institutes. These men get badly let down when they seek to enter an engineering school at the junior-class level. Although their training in the craftsmanship courses such as drafting and shop may well be superior to that of juniors in an engineering school they are seriously deficient in subjects more fundamental to engineering, such as mathematics, statics and physics.

Dean Saville holds that it is neither practical nor realistic to attempt to compartmentalize training in engineering and related fields as we do now. We say, in effect, to one boy that his capabilities are such that he will never rise above a technician's job, hence he should go to a technical institute; or to another boy that he should take a four-year course leading to an engineering degree. And even within the engineering schools Dean Saville does not favor the common practice of requiring boys to select their field of specialization early in the course.

Dean Saville would have the technical institutes and junior colleges alter their courses to make them of maximum value to the young men who discover after a year or two that they want to go on to take an engineering degree. For example, their courses in mathematics could be made more rigorous. He does not expect that this would permit a technical institute graduate to avoid losing time if he decides to go on to an engineering school, but it would permit him to start in the second year on an equal basis with other students.

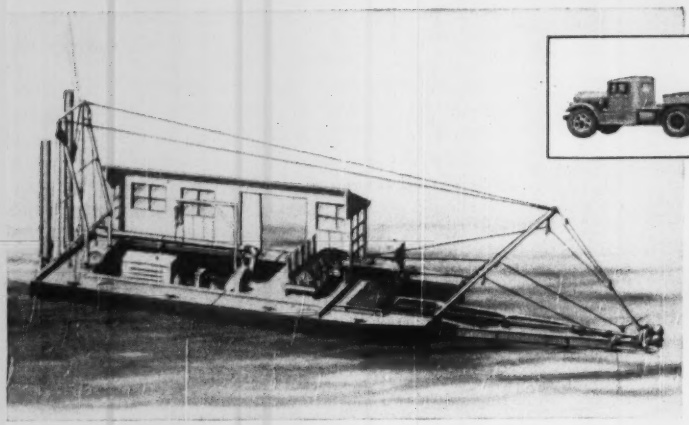
And as part of this program he would have the engineering schools do much less specialization in the early years, concentrating on fundamentals.

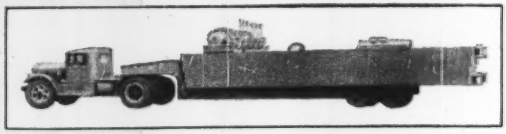
These proposals have much to commend them. Because of the personal factor that always will be involved, it will be difficult to keep technical institutes and junior colleges from overselling their service. Yet, if a sincere effort is made to integrate their training more closely with that of the engineering schools the amount of the competition should be reduced and its effect on the institute students who decide to go farther in their training will be minimized.

Certainly such a plan should greatly reduce the amount of lost time and the frustration of students who have guessed wrong when selecting the type of post-high-school training they were to take.

And in the engineering schools also there should be fewer misfits and much more opportunity for young men to get into fields of activity for which they are best fitted if the base of their education is broadened and the time when they must decide on a field of specialization is set late in the course. In fact, if we read the signs right, the present trend is toward moving specialization over into the field of post-graduate study. Dean Saville's plan would foster that trend.

NEW! ELLICOTT *Little Dragon* PORTABLE DREDGE





SHOWN AT THE LEFT is a cutaway view of Ellicott's revolutionary *Little Dragon portable* Hydraulic Dredge. Close examination shows the dividing lines for disassembly. And directly above can be seen the center hull section mounted on a truck for shipment.

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Operation is simple. After work is completed at one site, the dredge is easily disassembled into several self-contained units—each small enough to be shipped by rail, truck or water. At the new site, the center section is floated and other hull sections and deck house quickly and easily erected with unskilled labor.

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ENGINEERING NEWS-RECORD

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Orders to Interior agencies show how cutbacks work

Secretary Chapman lays down rules for shaving building programs to meet emergency—Bureau of Reclamation begins restudy—Rules could mean 20% building cut

Interior Department action gives the first indication of how much federal agencies may cut back their civil works programs. Secretary Oscar L. Chapman four weeks ago issued clear-cut instructions—particularly for water and power projects—to the bureaus in his department. If the secretary's criteria could be applied without qualification to Reclamation projects, they would produce a substantial reduction of perhaps 20 percent in the bureau's program even during the second half of the current fiscal year ending next June 30.

Basically, Chapman prescribed these standards for projects that are to go ahead:

(1) All power construction will proceed at full speed—except where the power plants are small and purely incidental to other functions, with the future power production rated unimportant in the current emergency.

(2) Projects for municipal and industrial water supplies will be continued.

(3) Irrigation works that can be completed in the next two years (by June 30, 1952) will go ahead.

(4) All small projects that can be completed by the end of the 1951 working season are to continue under construction.

These are the basic criteria on which the Bureau of Reclamation has reviewed its entire construction program. The standards, of course, have merely set the guideposts for the exercise of judgment. In reviewing the program, they could not be applied ruthlessly.

If the standards were applied without qualification or discrimination, they would result in very large cuts. In the Missouri Basin, for example, where the reclamation program is due to receive more than $90 million from Congress for the current fiscal year, the criteria apparently would allow a cutback of 25 to 30 percent.

Likewise, the Columbia Basin project in Washington apparently could be reduced this year to save most of the money—about $50 million—designated for that project in the Omnibus Appropriation Bill, still in conference in Congress. As the total construction appropriation for the Bureau of Reclamation will not much exceed $290 million, the potential cutbacks in the Missouri and Columbia Basin programs alone could account for a reduction of 15 percent or more in the bureau's work—provided the cuts were made on a ruthless basis.

Actually, the two programs in the Missouri and the Columbia basins probably will account for a heavy proportion of the total cut in Reclamation's future schedule. The bureau has completed its review of these programs and of all its other projects. A report is now on the secretary's desk for study and approval. It will then go to the Budget Bureau.

• **Drop non-essential work**—Secretary Chapman's letter stated quite definitely that all work not judged essential will be dropped from the program for the 1951 fiscal year and will not be resumed until warranted by changed conditions. No estimates for the deferred work, he said, will be included in the 1952 budget estimates. The Budget Bureau recently asked all government departments to submit these 1952 estimates by September 15, because of the emergency.

Work on non-essential projects now under construction cannot come to an abrupt stop. Chapman's instructions noted that work now under contract will be terminated in an orderly manner designed to protect the government's investment and funds. Termination of contracts on projects finally determined to be non-essential will take some time, and this fact will reduce the actual amount of any cut in the 1951 program.

As directed by the secretary's letter of instructions, the Reclamation Bureau will carry on its general investi-

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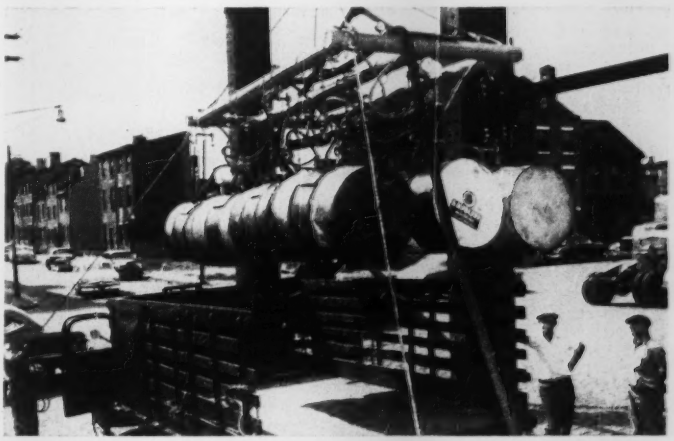


SUCTION UNLOADER—War thinking is credited for the successful demonstration (in Philadelphia) last week of a special suction device for unloading military supplies at railway sidings or docks. The device transferred eighteen oil drums (and they could have been packing cases or shells) from a railroad car to a truck in a matter of minutes. The device is an adaptation of the suction lifter device used to move precast concrete sections on construction jobs, which was developed by Karl P. Billner of Vacuum Concrete, Inc., of Philadelphia. Essential parts are a vacuum pump, the hose lines and the suction holders. The holders are attached merely by contact, thus eliminating all ropes and slings. It is claimed that jeeps, airplanes and other such loads can be as readily handled.—A. E. Ward photo.

Orders show how cutbacks will work

(Continued from page 23)

gations because of their importance to the national security. Congress is expected to agree upon about $6 million in the Omnibus Appropriation Bill for these investigations: engineering and economic, advance planning, Alaskan, and studies of existing projects.

Operation and maintenance activities likewise will continue without diminution. Congress has agreed on about $15,500,000 for these essential purposes.

Other programs of the Department of the Interior are similarly affected by the secretary's order. Under the Office of Territories, Chapman specified that construction programs of the Alaska Railroad and the Alaska Road Commission contributing directly to national defense should proceed at rates in keeping with military requirements. Other programs, he said, must be individually justified on the basis of their contribution to national security.

For the Bureau of Indian Affairs, the secretary directed that construction programs should be re-examined with a view to postponing any projects that can be deferred. Land acquisition, he said, should be held to a minimum. Only those acquisition programs now under way that can be completed this year are to proceed. These criteria apply also to the land and conservation programs of other agencies in the department.

Mineral programs of the department, he pointed out, are essential to national security. However, he asked the Bureau of Mines and the Geological Survey to examine each of their programs on a basis of essentiality. Further, these agencies and others concerned with mineral programs were asked to decide whether a larger proportion of their funds should be applied to projects that will serve the most urgent national defense requirements.

Construction program review—In essence, the secretary's letter called for a review of all departmental construction programs to conform to President Truman's directive that civil public works projects which do not contribute to defense or which are in competition with national defense needs be deferred or slowed down as far as practicable. Chapman stated that first priority will be given only to activities that make a direct contribution to national defense, including requests from other agencies for assistance.

"It was clearly stated in the President's message of July 19 to the Congress," Secretary Chapman pointed out, "that the defense program would include activities essential to the maintenance of economic strength as well as those contributing directly to the military program. Accordingly the term 'national security', denoting activities in both of these categories, is used in the secretary's statements or principles applying to the program review. While programs throughout the department contribute to the development of economic strength, it should be borne in mind that only those programs essential to maintenance of economic strength or which contribute directly to the military should receive high priority. Projects not in this category should be postponed or curtailed wherever practicable."

Charles M. Allen dies; authority on hydraulics

Charles M. Allen, 78, professor emeritus of hydraulic engineering at Worcester Polytechnic Institute, died at his home in Holden, Mass., Aug. 15. Professor Allen was best known for his work in the Alden Hydraulic Laboratory at Worcester, of which he was still director at the time of his death, having continued active there following his retirement from teaching in 1945.

Professor Allen was graduated from Worcester as a mechanical engineer in 1894, and began teaching there the following year. As an instructor he worked under Prof. George I. Alden on many studies of hydraulic machinery in the laboratory started by Professor Alden, which now bears his name. There he cooperated in the development of the Alden dynamometer. Later he developed the sale-velocity method of measuring the flow of water in pipes and penstocks.

In 1902 he was named assistant professor of experimental engineering, and four years later became full professor. He was made professor of hydraulic engineering in 1909.

Professor Allen was the recipient of many honors for his work in hydraulics, including the Elliott Cresson medal of the Franklin Institute, and the John Fritz Medal, highest award of the engineering profession.

Concrete pouring starts on Detroit Dam, Ore.

Following a ceremony Aug. 5, Gov. Douglas McKay of Oregon pulled a lever which dumped the first concrete for Detroit Dam, $70,000,000 project on the North Santian River, high in the Cascade range 40 mi east of Salem, Oregon's capital city.

As representatives of the state, the Corps of Engineers, and cities in the Willamette Valley looked on, a huge bucket holding 8 cu yd of concrete was emptied of its contents, and concrete pouring operations which will continue night and day for the next two years were under way.

The narrow gorge in which the dam is being built and limited working space has made preliminary work extremely difficult. Work, which began last year, involved digging a rock quarry, construction of a screening plant, a compressor building, roads and construction buildings, a diversion tunnel, powerhouse and other works.

The concrete released by Governor McKay was the first of 1,500,000 cu yd which will form the dam. An additional 80,000 cu yd will go into Big Cliff Dam 3 mi downstream from Detroit Dam.

The construction of Big Cliff Dam, a re-regulating project which will produce a steady flow of power while regulating Detroit's fluctuating discharge, will be started next year.

Concrete used in the dam construction is carried from Portland over Southern Pacific lines to Gates, and then transported under an industrial user contract, over the government railroad from Gates to the dam site.

A unit of the Willamette Basin flood control, power, irrigation and navigation project, Detroit Dam is being constructed under supervision of the Corps of Engineers. It will provide aid in controlling flood waters of the Santiam and Willamette Rivers, which each year cause heavy damage to lowlands along the two streams. Detroit's generators will produce 100,000 kw of power. Big Cliff will add another 18,000 kw.

The completed dam will be 463 ft high, with a width of 335 ft at the base and 1,580 ft at the top.

U.S. action likely on new Niagara power as House group has hearing on bill

Lehman-Roosevelt bill would let Army build, State operate, private company distribute—State Power Authority asks to be let do whole job

Congress may authorize redevelopment of Niagara Falls this year—if it stays in session long enough. If the congressmen go home in this election year, Niagara seems certain to get early attention next year.

Redevelopment of Niagara power, along the lines of a Federal Power Commission report last fall, would up present capacity of 440,000 kw at the falls to 1,572,000 kw.

Chances of relatively quick action on the redevelopment blossomed last week. The Senate unanimously ratified the Niagara water treaty with Canada on Aug. 9. Two days of hearings were begun Aug. 15 by the House Public Works Committee on a redevelopment bill introduced by Sen. Herbert H. Lehman and Rep. Franklin D. Roosevelt, Jr., New York Democrat-Liberals.

Chairman William M. Whittington, Miss. Democrat, said that committee action on the bill depended on the congressional schedule. Further hearings and a report on the bill may be forthcoming if Congress stays in Washington.

There appeared to be little opposition in Congress to the proposed power project. However, John E. Burton, chairman of the New York State Power Authority, appeared during the second day of the hearing to voice an offer of his agency to finance and build the additional power plant. He said the state was also willing to pay for St. Lawrence River power development and proposed that "we pay for these projects ourselves, and that we construct the projects and operate them."

Senator Lehman called the Niagara and St. Lawrence parts of a single overall plan for which the Administration has a "fervent desire" for early approval.

The Lehman-Roosevelt bill would split the redevelopment three ways. The Army Corps of Engineers would construct the project; the Power Authority of the State of New York would operate it and repay the federal government the cost of construction; Niagara Mohawk Power Co. presumably would distribute the power.

Both sponsors of the bill testified that the new power facilities at Niagara were needed in defense mobilization. They contended that there is a power shortage in the area, "a vital center of America's defense effort."

Proponents have said that power production could begin within two years, but Maj. Gen. Lewis A. Pick, Chief of the Corps of Engineers, told the committee that at least a year of engineering planning would have to precede actual construction. He estimated that first power from the new facilities could be brought in within four years and that the project could be completed in seven years.

Truman asks limit of $500 million road aid

President Truman last week asked Congress to limit federal highway aid to $500 million a year in the bill being considered by the Senate. His request met with quick—but only partial—response by the Senate Public Works Committee.

In a cogent letter to Chairman Dennis Chavez of the committee, the President asked that the group recommend these changes in the Senate bill:

1. Cut annual federal aid to the amount originally suggested in his budget message of last January—a total of $500 million.

2. Reduce federal aid for secondary roads to $150 million a year—all of it to be spent on roads in the federal-aid secondary system, as at present.

3. Maintain without change the existing matching ratios for federal and state funds on federal-aid projects.

4. Withdraw a proposed provision that would allow future federal allocations to be used for retiring bonds issued by states, cities or counties to build projects on the federal-aid system.

5. Reduce the $25,000,000 for military access roads—as provided in the Senate bill—to $10,000,000.

Within 24 hours after receiving the letter, the Senate committee held a closed session. It agreed to go part way toward meeting the President's request, but it held back on several points dear to the hearts of certain senators.

Cuts that the committee was willing to make reduced annual federal aid in the Senate bill from $620 million to $525 million. This reduction was to be effected by eliminating a $70,000,000 special fund for interstate roads and by cutting $25,000,000 off the $200 million for secondary roads previously recommended by the committee.

Alberta pipeline OK'd; long line to coast seen

First permit to export natural gas from Alberta has been granted to Westcoast Transmission Co.

The permit, issued by the Alberta government for 30 years, is interprovincial only, giving Westcoast the right to pipe gas from the Pouce Coupe gas area in Alberta to Dawson Creek in British Columbia.

DOMINION IRRIGATION—Water will flow through this 18-ft dia, 2,500-ft long tunnel to irrigation ditches when the St. Mary River dam is completed in southeastern Alberta, Canada. It's the key work of a long-term project which one day will draw on the St. Mary, Milk, Waterton and Belly Rivers to irrigate more than 500,000 acres in the arid Pallister Triangle, in south and east Alberta from Lethbridge to Medicine Hat. St. Mary Dam will be the largest earthen dam in Canada, will cost about $5,250,000, impound 320,000 acre-ft. (Eastern Publishers Service Photo)

Northeast worries over drought threat

With a near-drought drying out both crops and lawns in the area around Boston, municipalities were beginning to worry last week over dwindling water supplies.

Their moves were the most urgent of a series of water-supply improvement programs reported to ENGINEERING NEWS-RECORD.

The Massachusetts Department of Health asked the City of Boston and five suburban municipalities to approve the diversion of surplus water from the Metropolitan District Commission's System into the Charles River. The extra water would be used to supplement river water, low because of heat and lack of normal rainfall. The department reported its division of sanitary engineering has received many complaints of odor in the Charles basin at Boston and above.

At Worcester, Mass.—which found its reservoirs at only 65 percent of capacity (compared to 73 percent a year ago) Earl R. Perry, Public Works Commissioner, asked the city for $50,000 to pay for emergency water and pumping from the Metropolitan District's Wachusett Reservoir, if the need arises. City officials emphasized that the need is not critical at the moment—they just want insurance.

• **Expansion needs water**—Houston, where recent action of the city council vastly extended the city limits (ENR July 27, p 33) and brought with it increased population, found that it would have to spend another $24,000,000 for water supply.

City voters were asked to OK a bond issue that would be financed by a 50 percent increase in water rates (1,000 gallons now cost 20 cents). The plan calls for a new dam and reservoir on the San Jacinto River, a new filter plant and other work.

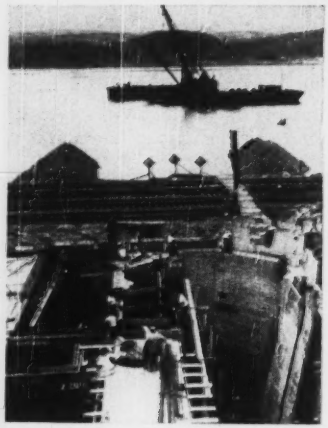
Jacksonville, Fla., too, pushed ahead with an expansion of its water system—a $7,000,000 job that includes new wells, underground storage reservoirs, new purifying equipment, new pumps, that will bring the system up to a capacity of 70 mgd by next year.

And at Tulsa, the city pushed ahead with its $15,750,000 Second Spavinaw project, expected to bring in enough water to give the city a 100 mgd capacity within a year or so. The project involves a new 15 mg reservoir and a new outlet from Spavinaw Lake, outside the city.

• **Work needed**—Other cities were having troubles that ranged from new rates to legal tangles.

Dayton—now planning a new filtration plant—listened to representatives of its consulting engineering firm (Alvord, Burdick and Howson) tell of needed improvements from supply, quality and health standpoints. Columbus faced the possibility of a six-month delay on construction of a new Big Walnut Reservoir, because of legal requirements for a six-month trial period on new water rates, now proposed, before bonds based on them can be floated.

And citizens of Baltimore—which was held to the same water rates since 1924—found that it would have to raise its water rates, if it would support proposed new expenditures on the customary "pay as you go" basis.



HUDSON TAP—Here's the intake end of the substructure for New York City's 100-mgd emergency pumping plant on the Hudson's east bank at Chelsea, N. Y. It's one answer to the city's increasing water demand. (ENR June 29, p 33). Floating crane places pipe from crib to shore. (Wide World photo)

Chrysler Corp. plans big plant at Indianapolis

The Chrysler Corp. of Detroit is planning to erect a large auto parts manufacturing plant at Indianapolis, Ind., on a site at Shadeland Avenue and 30th Street, northwest of the large plant of the Western Electric Co.

An obstacle to be overcome in carrying out this development is sewage disposal. City engineers will meet with Chrysler officials before the Marion County Plan Commission rules on a petition to rezone 105 acres from an agricultural to an industrial district. The Western Electric Co. tied in its sewer system with that of the city, and Chrysler may have to do likewise or join the system created by the Western Electric.

New aviation terminal planned for N. Y. City

After four years of negotiations, the Triborough Bridge and Tunnel Authority of New York City and the major airlines serving the metropolis have agreed to construct a large terminal and a 558-car parking garage on the west side of First Avenue between East 37th and 38th Streets.

The project, estimated to cost about $4,000,000, must be approved by the Board of Estimate. "As soon as it is approved," says Chairman Robert Moses, "we will move speedily to construct the two-level structure, which, under normal conditions, ought to be ready for use late in 1951."

The present small terminal opposite the Grand Central Terminal can accommodate only a small fraction of the buses needed to carry 200,000 passengers a month to and from the airports. At present, buses must park in narrow Park Avenue, or East 41st St., contributing to already-great congestion.

At the new location, buses from La Guardia and New York International airports will be brought directly into the building from the Queens-Midtown tunnel. All loading and unloading will be inside the building, which will cover 80,000 sq ft. The roof will be used to park cars.

Mr. Moses said he expected to finance the venture with 25-year bonds and when they are paid off the property will revert to the city.

BIG BANK BUILDING—A $5,000,000 height-limit bank and office building for Bank of America will be constructed by Capital Co., Los Angeles, at the corner of Wilshire and Vermont boulevards. The main floor will house the bank; the remaining eleven floors each will have rectangular undivided floor space of 13,500 sq ft, with electrical, plumbing and other utilities between the floors so the floor area may be changed by adjustable partitions. William D. Coffey is structural engineer for the job; T. Evans, foundation engineer; Holmes and Narver, mechanical and electrical engineers.

Urban traffic jams grow thicker as cities ponder solutions to problem

ENR survey shows trend to off-street areas as chief answer to traffic snarls — Citizens, merchants, officials join in search for answer

While officials continued their struggles to clear it, the traffic snarl grew in cities all across the United States.

A quick survey by ENR's correspondents in 23 major cities showed all sorts of solutions being planned last week—solutions that ranged from elaborate off-street parking structures to assigning more police for traffic regulation—but indicated the growing seriousness of the problem.

The need for study and answers was being pushed from all sides—by businessmen who feared the literal choking off of downtown areas, by property owners, by motorists' groups, and taxpayers and municipal officials.

• **Put another nickel in**—The biggest (and probably worst-congested) city of all—New York—finally decided to try parking meters to solve its problems. It picked large areas in four of its five boroughs—Manhattan, Brooklyn, Queens and the Bronx—for installation of a total of nearly 1,500 meters. City officials hoped the meters would eliminate double-parking, and fill the need for short-term parking spaces in the congested shopping and business areas.

Indianapolis, with 524 parking meters already in operation, advertised for bids for 750 more; and Muncie, Ind., planned to buy vacant areas for parking lots, monitoring them with parking meters.

• **Get out and get under**—The solution that intrigued most planners, though, was the establishment of more off-street areas for parking.

These took many forms—from an elaborate, $2,000,000 underground garage in downtown Dallas, Tex., to a proposal for a number of small-capacity lots to be scattered over business areas of Virginia cities.

The underground or building parking areas were the most elaborate, of course. The Dallas project is part of a two-story and penthouse Mercantile-Commerce building, and includes four underground levels that can handle a daily total of more than 1,500 cars.

Several other such structures were planned. One of these would be a $300,000 structure in downtown Little Rock, Ark.; a $500,000 structure for Boston, and a $2,500,000 combined office, store and parking building for Jersey City, to handle 1,200 cars.

At Los Angeles, plans for the $5,000,000 Pershing Square underground garage bogged down again—this time over legal difficulties and what the city's Park Commission called "uncertain bids."

And Buffalo, N. Y., worried over possible bombing attacks (as were several other cities—notably New York) mulled over plans for an underground parking garage in the downtown area that might also be used as a bomb shelter.

• **Or get off**—The problem of other off-street parking space was a universal one—but one more easily solved. Most suburban communities around big metropolitan centers, for example, had already taken long steps to give their "night-time residents" places to put their cars near railroad stations and other community centers.

In many other places, the approach to the problem took the form of commission studies and engineering surveys of need. For example, Muncie, Ind., and its planning commission was looking over a survey that seeks to provide 1,800 additional off-street parking spaces downtown; Sacramento, Calif., employed the engineering firm of Coverdale and Colpitts, New York, to survey proposed sites, suggest means of control and a parking rate structure; in Portland, Me., a citizen's committee started the same sort of survey.

Other communities that got into the off-street parking act included: Memphis, Tenn., where the state highway department and the city began a joint study of expressway and parking needs; Columbus, Ohio, where a $3,000,000 off-street system was initially approved by the city council; the twin cities of Bristol, Tenn., and Bristol, Va., where a traffic study was under way; Akron, Ohio, where a Citizen's Parking Advisory Committee approved plans for a municipal 3-story parking structure on Cherry Street, to cost $1,250,000; Louisville, Ky., where an elaborate $81,000,000 overall traffic plan was getting final—and close—scrutiny for its effect on community life, and Detroit, where the common council authorized condemnation of a block-square area to make room for a proposed 3-story municipal parking garage.

And in Boston, the much-respected Finance Commission completed a 23-page study for the mayor and his staff, recommending that the city start immediately to plan better for public parking. The commission suggested that—with a $5,000,000 appropriation from the state apparently assured—the city would do well to put all its traffic control and planning facilities into one department.

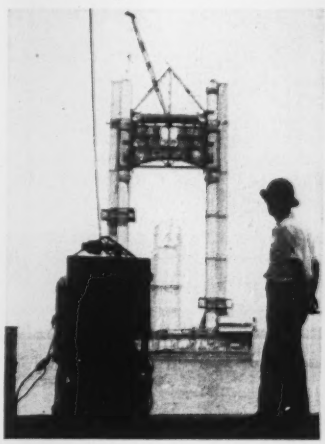
• **Ease the flow**—One obvious answer to the problem, of course, was street improvements. And plenty of such projects were under study or under way—all the way from minor curb-straightening and widening work to elaborate expressways and bridges.

At Tulsa, Okla., whose residents had long fought for the project, work finally got started on the several-million-dollar 51st street bridge over the Arkansas River. Employees of the general contractor, M. E. Gillioz, established headquarters on the banks of the flood-swollen river last week.

Indianapolis city officials skirted around legal snarls to push for construction of the new $1,100,000 Fall Creek Bridge—a 262 ft structure that will be wider and longer than a much older bridge it will replace. Construction was held up when a court at Hammond, Ind., ruled against the issuance of bonds by municipal districts, on the grounds that such districts were a "subterfuge" to evade legal debt limits. So the city decided to issue regular corporation bonds to finance the work.

And in North Carolina, municipalities looked on a proposal that the state take over maintenance of city streets as a mixed blessing.

The North Carolina League of Municipalities said it welcomed Gov. Kerr Scott's proposal, but wasn't sure it would be necessary to increase gasoline taxes by one-half or three-quarters of a cent, as the governor proposed.



ONE ANSWER—A way to ease the flow of traffic is to provide new arteries for it—which is exactly what the 2,150-ft Delaware River Bridge at Wilmington, Del., will do (ENR April 20, p 32). J. T. Martin, erection engineer, stands at right watching tower erection preparatory to spinning cables for the suspension.

BALTIMORE'S NEW AIRPORT—Airview of the administration building and control tower of the new Friendship Airport dedicated at Baltimore, Md., last month. The 3,200 acre airport is five times as large as Washington's National Airport and four times the size of New York's LaGuardia Field. Its instrument landing runway is one of the longest in the country. The strip extends 9,450 ft and is 200 ft wide throughout. (Wide World Photo)

HHFA to help develop composite code

Development of a composite administrative regulation to include a building code, an electrical code, a plumbing code and a demolition ordinance is to be undertaken by York, Pa., with the technical assistance and advice of the Housing and Home Finance Agency.

"Experience gained from this project will be useful to the HHFA," Administrator R. M. Foley said, "in rendering advice and assistance to other municipalities in the improvement of building codes and allied regulations."

He emphasized that this was a special purpose project for the development of needed information on codes and regulations and that the HHFA could not undertake to render such extensive assistance to cities generally.

York will name a committee to work with technicians of the HHFA, and the drafting of the composite code will be the work of that committee, with research assistance by the federal agency. The Research Division of HHFA will supply current information on housing and building regulations, will make consultants available to the committee, and will review intermediate drafts of the code provisions.

York's building and related regulations are now in a flexible form, so the city is in a position to start with the development of a comprehensive code without handicaps. City officials have indicated the desire to develop the best possible code—one which will give necessary protection to standards of construction and will also facilitate desirable changes in construction practices.

Tulsa office to coordinate S.W. engineering data

Tulsa, Okla., is to become the nerve center of Southwestern power and flood control work with the opening of an information center there by the Southwestern Division of the Corps of Engineers to coordinate data throughout the Arkansas, White and Red River basins.

Heading the work is Lt. Col. James B. Lampert. He and a staff of eight engineers primarily will supervise the compilation of a report on those basins to be forwarded to Congress for future action.

The final report will cover flood control, navigation, domestic and municipal water supply, reclamation and irrigation programs, hydroelectric power output, and abatement of pollution, as well as the establishment of and maintenance of recreational facilities.

The states covered in this work are: Oklahoma, Texas, Arkansas, Louisiana, Missouri, Kansas, Colorado and New Mexico.

More funds may be sought for big Alaskan project

Supplemental funds for the Bureau of Reclamation to begin construction of a 30,000-kw hydroelectric project near Anchorage, Alaska, may be sought this year. (ENR Aug. 17, page 28)

A bill authorizing the $20,000,000 Eklutna project was passed last month, and one of the purposes was stated to be "To further the self-sufficiency of national defense installations" in the area. Early start of construction may be asked because of the defense implications.

Although reclamation is slated to construct and operate the project, Congress authorized the new power development only after testimony that this would not amend reclamation laws. The project, it was pointed out, was not a reclamation development but solely a power installation.

The project will consist of a low dam at Lake Eklutna, 36 miles north of Anchorage, and diversion tunnel, penstock, power plant and transmission lines. Total cost is estimated at $20,365,400.

A.E.C. and Agriculture Dept study radioactivity

The Atomic Energy Commission and the Department of Agriculture have announced the completion of a $250,000 greenhouse, at Beltsville, Md.

Scientists will use the building for research in plant and soils with radioactive isotopes. The inside contains many distinctive features, designed for studies in radioactivity.

Stainless steel plates line the double doors in the basement, where highly radioactive material will be stored. An adjoining room extends beyond the greenhouse proper. They call this room the well. Remote controls direct the machinery. The machinery takes cans of radioactive material into the well, and suspends them there for safety purposes.

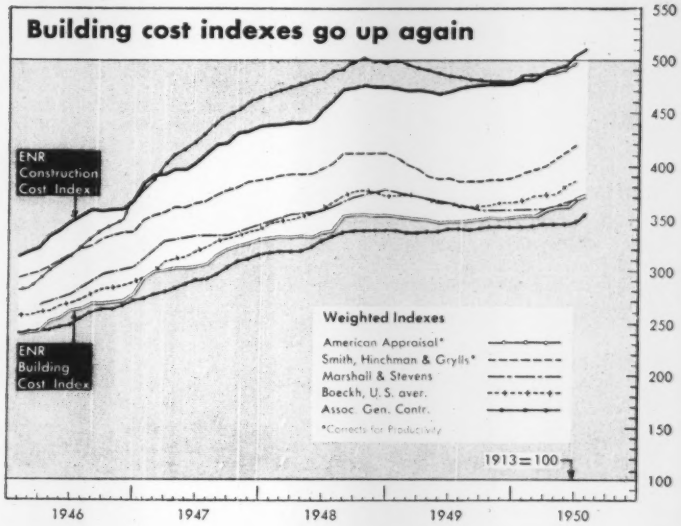
Employees enter this "hot" area through dressing rooms. They leave their clothes in lockers in the first room. Then they pass through a shower stall. In the next room they dress in special clothing.

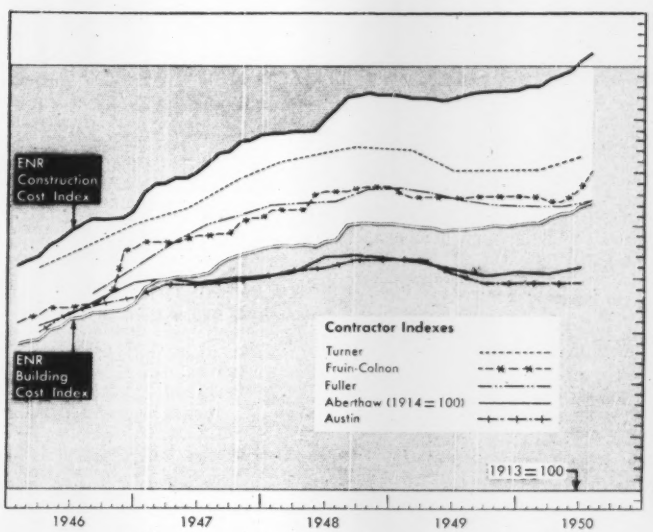
Light, heat, and moisture are controlled in the three growth chambers in the upper part of the greenhouse. A pumping plant throws water on the glass in hot summer months. This aids the blower system in controlling temperature.

Automatic blowers force radioactive fumes out through a filter system. Employees will use long handled tools and lead shields for safety. Furniture is metal.

Big N. Y. school program—A 6-year school construction program, to include 298 new buildings and additions at a total cost estimated by Charles J. Bensley, chairman of the Board of Education's committee on buildings and sites. All but 44 of the 298 projects are intended for construction by 1956.

CONSTRUCTION BUSINESS





The midyear roundup of building cost indexes shows rises up to 8.5% since last December. The indexes that do not adjust for productivity have been climbing gradually for a year under pressure from labor and lumber price increases.

But most of the contractor indexes managed to stay down (even after materials and labor costs started moving up again) until June and July when they, too, started to move up again.

Here's how the indexes look:

Weighted Indexes	Dec. 1949	Latest 1950	% chg
ENR Construction	480	Aug. 521	+8.5
ENR Building	353	Aug. 382	+8.2
American Appraisal*	483	June 498	+3.1
Assoc. Gen. Contr.	345	July 356	+3.2
E. H. Boeckh	368	June 386	+4.9
Smith H'mn. & Grls*	392	June 420	+7.1
Marshall & Stevens	361	June 369	+2.2
*Corrects for productivity			
Contractors Indexes			
Aberthaw	367	June 311	+1.3
G. A. Fuller	373†	July 377	+1.1
Turner	407‡	June 417	+2.5
Fruin-Colnon	382	July 402	+5.2
Austin	298	June 298	0

†January, 1950 ‡November, 1949

All pipeline records fall

The biggest pipeline year in history is the record already established for 1950, with 5 months still to go.

New construction contracts totalling $368 millions have been reported by the ENGINEERING NEWS-RECORD through July. This is more than all waterworks and sewerage contracts combined for the same period, more than the total for bridges, or for public housing, or for earthwork, irrigation and drainage or for all public unclassified construction including airports.

This $368-million total for pipelines for the first seven months of 1950 is 308% more than corresponding awards last year. It is 57% more than the 12-month total for 1949 and over 1% above the previous record 12-month total for 1948.

• **Other unclassified** construction is up in some categories, down in others but in no case is it making the impact on the market that pipelines are producing in 1950.

Unclassified Construction

Type	1950 7-mo	% chg from '49
Private		
Pipe Lines	$367,954,000	+308
Transmission Lines	56,425,000	−22
Railroads	12,768,000	−5
Telephone	2,751,000	+162
Radio	1,809,000	−65
Airports	3,489,000	+260
Drive-in theatres	13,498,000	+26
Other	68,265,000	
Total Private	526,959,000	+122
Public—Federal		
Airports, Airbases	4,667,000	+8
Hangars, Bldgs	17,135,000	+24
Airport Housing	524,000	−95
Airport Facil & Util.	4,959,000	−22
Shipyards	1,486,000	+827
Other	76,820,000	+76
Total Federal	105,589,000	+33
Public—State & Mun		
Airports	43,090,000	+4
Subways, Tunnels	7,209,000	−36
Other	79,288,000	+26
Total State & Mun	179,587,000	+12
Total Unclassified	762,136,000	+291

Road prices stay down

The "composite-mile" for the 2nd quarter is down to 140.0 compared with its base of 100 for 1925-29. This report by the Bureau of Public Roads reflects low bids received on federal aid highway contracts. This second quarter value is down from 140.7 in the first quarter of 1950 and the high of 165.3 in the 4th quarter of 1948.

Excavation at 91.2 is the same for both the first and second quarters and compares with a high of 125.4 in the third quarter of 1948.

Concrete pavement is up to 160.1 in the second quarter from 159.6 in the first but compares with a high of 176.7 in the last quarter of 1948.

Structures are down to 191.0 in the 2nd quarter from 197.0 in the first and a high of 235.7 in the 4th quarter of 1948. This drop in the 2nd quarter is due entirely to the structural concrete component since steel prices remained the same.

BIDS AND BIDDERS

(Major project news received after Construction Reports, page 72, went to press.)

Shopping Center—Froedert Enterprises, Inc., and Kurtis R. Froedert & Associates, Milwaukee, Wis., plan to construct a $10,000,000 shopping center to be known as Westgate. Grassold & Johnson are architects.

Chemical Plant—Ethyl Corporation, Houston, Tex., plans $6,500,000 chemical units on Ship Channel divided as follows: Tetra-Ethyl Lead, $1,750,000; Ethyln Chloride, $1,250,000; Sodium & Chlorine, $1,500,000; Miscellaneous Chemicals, $1,000,000.

Laboratory—U. S. Army Quartermaster Corps, Washington, D. C., will build a $12,000,000 research laboratory near Charleston, S. C.

Dam—Bureau of Reclamation received low bid of $11,564,347 from Western Construction Co., Sioux City, Iowa, for earth-fill dam across Marias R., Liberty Co., Montana. Bids include 3-mile dike, diversion tunnel, concrete spillway and outlets for canal, and 14 miles of power line.

Electric Plant—Anderson, Ind., Municipal Electric Plant asks bids on $6,000,000 steel, brick, concrete electric generating plant. Luramore and Douglas, Chicago, are engineers.

Housing—St. Paul, Minn., Housing and Development Authority asks bids Sept. 19 on housing project on tract bounded by Wheelock Parkway, Jackson and Mississippi Sts. and Arlington Ave. of 100 two-story, basement buildings to contain 512 dwellings, FHA financed. Estimated cost is $5,192,000. Dimond, Haarstick & Lundgren; G. W. Dimond & Associates and Gausman & Moore, all of St. Paul, are architects.

Hotel—Henry C. Beck, Dallas, Tex., won contract for 520-room, 24-story addition to Adolphus Hotel in Dallas at approximately $5,000,000, excluding elevators. Wyatt C. Hedrick is architect.

Highway and Bridges—Pennsylvania Dept. of Highways awarded contract for 2.96 miles of divided highway and 3 I-beam bridges and service roads in Washington and Allegheny Counties to Harrison Construction Co., Pittsburgh, at $2,676,817.80.

State Offices—Missouri State Board of Public Buildings awarded contract for 9-story state office building, to be erected on south side of Capitol Ave. at Jefferson St. in Jefferson City, to MacDonald Construction Co., St. Louis, at $3,077,282.

Housing—New Haven, Conn., Housing Authority awarded contract for 300-unit Brookside moderate rental housing project to Fursco Amatruda Co. at $2,949,648.

Housing—San Francisco, Calif., Housing Authority asks bids Sept. 20 for North Beach Place Housing Project with 13 3- and 4-story buildings with 229 apartments. Estimated cost is $2,367,500. Ernest Born and Henry H. Gutterson are architects, A. V. Saph, Jr., is engineer.

Hospital—Jeffres-Dyer, Inc., Washington, D. C., submitted low bid of $2,114,000 for Negro TB building at Baltimore City Hospital, Baltimore, Md., 4-story, H-shaped for 294 beds. Palmer, Fisher, Williams Nes are architects; Van Rensselaer Saxe, structural engineer; Egli & Gompf, Inc., mechanical engineers. All are located in Baltimore.

Highway and Bridges—F. D. Kessler, Inc., Northumberland, Pa., was low bidder on divided highway, 2 plate girder bridges, 2 reinforced concrete structures and 2 reinforced concrete bridges in Schuylkill Co., Pa., for $2,212,157.17.

Dormitories, Dining Hall—University of Oklahoma, Norman, asks bids Sept. 12 for four 4-story masonry men's dormitories at $400,000 each and dining and recreation hall at $400,000. Sorey, Hill & Sorey, Oklahoma City, are architects.

Pipeline—Pacific Gas & Electric Co., San Francisco, Calif., awarded contract for 24 miles of 20 inch pipeline from Hollister to Moss Landing at $1,500,000 to Pacific Pipe Line & Engineering Ltd., San Francisco.

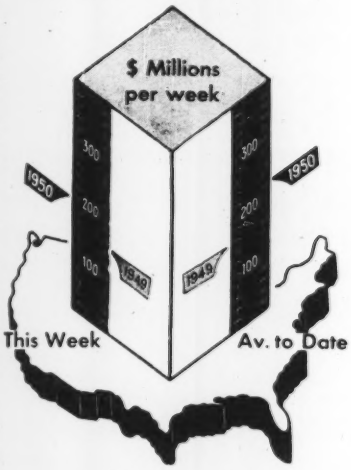
Ocean Terminal—T. A. Loving & Co., Goldsboro, N. C., was awarded contract by North Carolina State Ports Authority for $1,895,539 ocean terminal in Morehead City. G. W. Gillette is executive director; Carr & Gremer Co., Durham and Baltimore, Md., engineers.

Railway—Beaumont, Tex., voted bonds amounting to $1,750,000, August 12, for relocating SP Railway, combining MP Railway and SP Ry tracks on elevated track and relocating KCS Railway tracks and yards, removing all tracks from Railroad Ave. DeLeuw, Cather & Co., are engineers.

COSTS AND VOLUME

ENR INDEX NUMBERS

Index Base = 100		1913	1926	1949
Construction Cost	Aug. '50	520.60	250.25	109.14
Building Cost	Aug. '50	382.36	206.69	108.69
Volume	July '50	495	217	175



Activity This Week

As reported to ENR (in millions of dollars)

Amount of contracts let

Week of Aug. 24 1950		Cumulative 1950 (34 wks.)	Cumulative 1949 (34 wks.)	% chge
Federal	$4.8	$869.0	$735.1	+18
State & Mun.	87.9	2,380.4	2,120.3	+12
Total Public	$92.7	$3,249.4	$2,855.4	+14
Total Private	106.1	4,413.0	2,505.4	+76
U. S. Total	$198.8	$7,662.4	$5,360.8	+43

Contracts by type of work

	This Week	Cumulative 1950 (34 wks.)	Cumulative 1949 (34 wks.)	% chge
Waterworks	$4.8	$146.5	$147.3	−1
Sewerage	8.5	167.4	174.0	−4
Bridges	3.7	244.9	213.6	+15
Highways	28.0	864.3	620.4	+39
Earthwork, Waterways	2.3	305.7	383.0	−20
Buildings:				
Public	32.8	1,078.9	806.3	+34
Housg., pub.	4.6	189.1	289.5	−45
Housg., priv.	40.6	2,370.1	1,101.2	+115
Commercial	23.9	645.5	385.9	+67
Industrial	37.1	835.3	699.9	+19
Unclassified	12.5	814.6	519.7	+57

NOTE: Minimum size projects included are: Waterworks and waterway projects, $25,000; other public works, $50,000; industrial buildings, $68,000; other buildings, $250,000.

New capital for construction

	Cumulative 1950 (34 wks.)	Cumulative 1949 (34 wks.)	% chge
Corporate Securities	$1,355.3	$1,647.1	−18
State and Municipal:			
Excl. housing	1,427.2	1,386.7	+3
Housing	483.8	578.2	−16
Total Capital	$3,266.3	$3,606.0	−9

Plans take shape for ASCE centennial

Plans for a celebration nearly two years away—the 100th anniversary of the founding of the American Society of Civil Engineers—are beginning to take shape.

The three-month observance, extending tentatively from July 1 to Sept. 30, 1952, will be held at Chicago, centering around the Chicago Museum of Science and Industry. It will be marked by the opening of a new permanent educational exhibit in the museum building; by stage productions to be presented several times daily during the celebration, and by a general convocation of the engineering profession in joint meeting with the ASCE.

Directors of ASCE have already announced that a non-profit corporation has been formed to carry out the project and direct all activities. Head of this corporation will be Lenox R. Lohr, president of the Chicago Museum of Science and Industry, formerly general manager of the Chicago "Century of Progress" exposition in 1934, and president of the Chicago Railroad Fair of 1948 and 1949. Mr. Lohr is himself a professional engineer, and a member of ASCE.

The general convocation is planned for Sept. 3 to 13, and officials of the four other (but much younger) major professional societies have indicated that their groups will participate. In addition, engineering colleges and schools and nearly 100 other national, international and regional engineering groups will participate.

Protest R.I. bridge

Protests are developing against construction of the muti-million-dollar bridge across the lower reaches of Narragansett Bay in Rhode Island. Despite the opposition, the Narragansett Bay Bridge Authority is going ahead with the plans for the span to link Jamestown and Newport.

Two groups are carrying their protests to the U. S. Army Engineers. They are the Jamestown Conanicut Island Association and the Newport Brenton Point Association, the latter headed by Rear Admiral Charles L. Andrews, Jr. U. S. N.

A bridge now connects Conanicut Island and Saunderstown on the westerly side of the mainland and the bridge would eliminate ferry service between Jamestown and Newport. The bridge would make it possible for all traffic from the west and south to use the bridge on trips to Fall River, New Bedford and the Cape Cod areas.

Glennan, Case head, named AEC chairman

For the first time this year, the Atomic Energy Commission was nearing full strength last week as President Truman filled the vacant five year term on the commission by appointing Thomas Keith Glennan, a college president and former Hollywood studio manager. The appointment was expected to get quick confirmation by the Senate. The commission has had five members this year only during periods in which Ex-Chairman David E. Lilienthal and Former Commissioner Lewis L. Strauss were serving prior to the effective dates of their resignations.

A native of North Dakota, Glennan, 44, goes to the commission from the presidency of the Case Institute of Technology, Cleveland, Ohio. He was operations and studio manager for Paramount Pictures and Samuel Goldwyn Studios in Hollywood, Calif., and was with the division of War Research of the Navy Underwater Sound Laboratory of Columbia University, at New London, Conn., during World War II. From 1945 to 1947, he was an official of the Aniline Film Co., Binghamton, N. Y. He went to Case in 1947.

Boston Harbor bridge plan—Plans have been revived for building a bridge over Boston Harbor between the North and South Shore areas instead of building a new tunnel under the harbor alongside the Sumner tube now in use. A bill for that purpose has been filed in the Massachusetts Legislature. The bridge would cross the inner harbor from a point near the East Boston International Airport and end at South Station on the Boston side. Supporters of the plan claim the bridge would cost less than another tunnel under the harbor.

Big B.C. aluminum plant may be held up by war

War in Korea and threat of a third world conflict may affect the decision of the Aluminum Company of Canada on building a $500,000,000 aluminum plant in British Columbia, but it won't hasten a decision, according to company officials.

With a high world demand for aluminum it is believed the project will proceed if it proves feasible.

Meanwhile, company officials are reported satisfied, on the basis of engineering reports, that a suitable Tweedsmuir Park damsite is available on the Nechako River. The only other main stumbling block now is construction of a transmission line from the proposed powerhouse on Kemano River to the townsite at Kitimat, which is about 100 miles east of Prince Rupert.

Engineers are seeking to determine whether construction and maintenance costs would be lower on the 48-mi. overland route which crosses a 6,000-ft. divide, or along the steep cliffs of the Gardner Canel shoreline.

To determine the effect of winter weather on transmission lines, a short section of test line with towers will be built in the mountains above Kemano River before fall, and crews will be stationed in the hills through the winter to report on conditions.

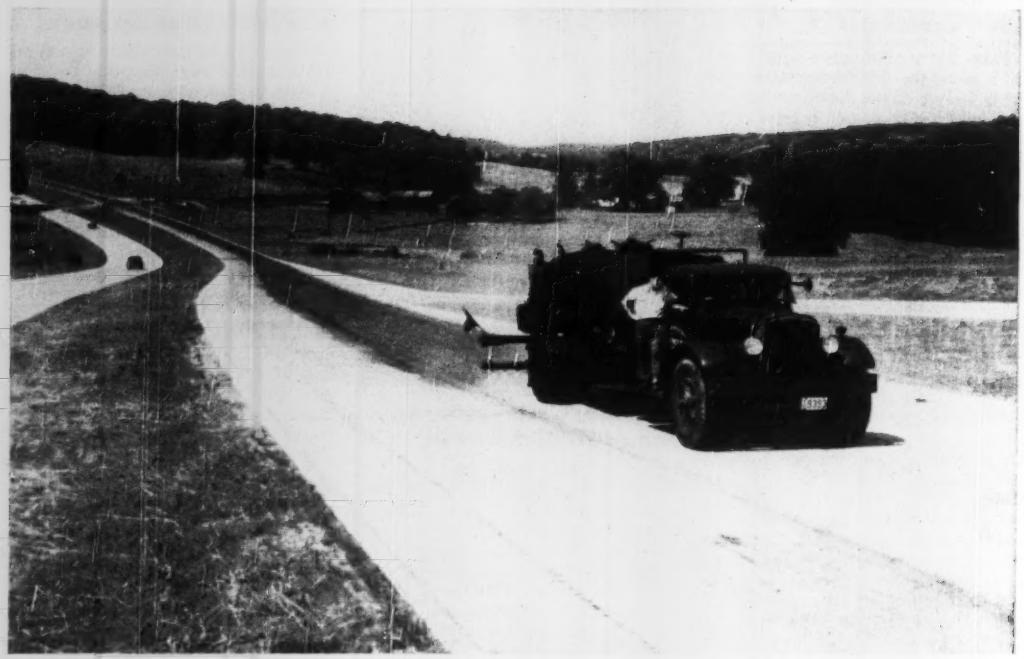
Present plans for the big Tweedsmuir Park project envisage location of the main dam at the Necko River canyon, with diversion from Tahtsa Lake, 150 mi west, by tunnel through the mountains to the Kemano River powerhouse. Field work is under direction of W. G. Huber, vice president of B. C. International Engineering Co.

Railroads will spend $30,000,000 in Kentucky

More than $30,000,000 will be spent eventually by eight major railroad systems operating in Kentucky to improve their facilities and services there. This is disclosed in a study which was made by the First National Bank of Cincinnati, Ohio.

The survey revealed that five of the eight lines are planning to spend $13,-$70,000 to improve their respective roads in the state, and six of them will spend $16,786,000 in new equipment for use within the state.

Carriers covered by the survey included the L. & N., Southern, C. & O., Illinois Central, Kentucky & Indiana Terminal Railroad Co., Kentucky & Tennessee Railway, Nashville, Chattanooga & St. Louis Railroad, and the Frankfort & Cincinnati Railroad.



SPRAYING OIL on a concrete pavement on the Taconic State Parkway in New York to make the surface more resistant to salt.

New York Uses Oil Spray To Protect Concrete Pavement

NEW YORK STATE is now spraying newly laid concrete pavements with petroleum distillate oil as an additional protection against attack by salt used during winter months to keep the pavement free of ice. The oil is mixed with a volatile mineral spirit to facilitate its application and absorption by the surface concrete.

This protection is in addition to that obtained through the use of air-entraining admixtures in the cement—a method for reducing the surface scaling of concrete pavements on which the New York Department of Public Works did the pioneer work in this country.

Air entrained concrete provides a reasonable amount of protection against the weaker salt solutions, but on pavements where direct applications of salt in amounts ranging up to 600 lb per mile of two-lane pavement were being used to insure an uninterrupted service it was found that pavement surfaces were suffering, especially on newly constructed highways. Consequently, additional protection in the form of bituminous compounds, asphalt, tar and linseed oil was tried, but with little success. These surface coatings chipped or wore off.

• **Accidental discovery**—Then, largely by accident, the department engineers noted that pavements on upgrades, where motor cars and trucks drop more oil on the surface, were in better condition than those on the downgrades. That observation led to the conclusion that similar oil, purposely applied, should provide additional protection.

Research was begun at once in department's laboratory, using SAE No. 10 motor oil diluted with various amounts of gasoline applied to 2-in. mortar cubes made of both portland and natural cements. The cubes were subjected to 100 cycles of freezing and thawing in a container filled with a 10 percent solution of calcium chloride. Cubes treated with one brush coat of No. 10 oil lost 4.6 percent of their weight; those having two brush coats lost 3.6 percent, and those with three brush coats lost only 0.3 percent, chiefly along the edges, flat surfaces being little affected.

From these tests it was decided that one brush coat would be adequate, since the loss after 25 cycles was only 0.5 percent. It was concluded that a protective coat applied every couple of years for the first few years of the life of a pavement would make the surface immune to salt action indefinitely.

• **Field tests**—Field tests then were begun, using a petroleum distillate oil with an SAE rating of about 5 (because of its lower cost) and Stoddard solvent, a mineral spirit used in dry-cleaning, which was substituted for the gasoline to reduce the fire risk. A truck-mounted spraying apparatus was employed having a 12-ft spray bar with nozzles at 1-ft centers, thus making it possible to cover one 12-ft lane in one operation. A rate of coverage of 1/20 gal per sq yd was desired, but as No. 5 oil had been substituted for No. 10 oil, the rate of application was increased to 1/15 gal

per sq yd. This was obtained by operating the truck at 2 mph.

The oil was completely absorbed within 15 minutes after application, and no change in the color of the pavement was noted nor was there evidence of slipperiness nor of an oil film on the surface.

That was in the fall of 1948, too late for extensive tests. More pavement was treated last year, and still larger areas now are being treated.

• **Current specifications**—Specifications issued for the treatment of 21 miles of both two-lane drives on a section of the Taconic State Parkway are typical of current practice. They call for application of the oil from a spray bar covering a full 12-ft lane width at the rate of one gallon per 17 sq yd of pavement.

The waterproofing consists of equal parts by volume of a refined neutral petroleum distillate oil and petroleum mineral spirit meeting the following specifications:

Petroleum distillate oil:

Saybolt universal viscosity at 100 deg F.	90-120
Flash point, deg F.	200-350
Pour point, deg F.	Max. 35

Petroleum mineral spirit distillate:

Initial boiling point	Max. 320 deg F.
10% distillate	Max. 330 deg F.
90% distillate	Max. 385 deg F.
End point	Max. 410 deg F.
Flash point, Tag cc deg F.	Min. 100 deg F.

The spraying is required to be such as to produce a continuous, coherent film when applied at the specified rate.

This application was to be made to pavement that received one application last year as it is believed that two applications will be required to penetrate and seal the pavement completely. The contract price was a little over $8,000 for the 42 miles of two-lane pavement covered by the contract.

On the first section where this application of 1/17 of a gallon per square yard of pavement was made to pavement that had been given one application of oil last year it was found that the pavement would not accept that amount of oil without becoming slippery. Consequently it was necessary to close that section to traffic for eight hours, and at some points sanding was necessary for four or five days.

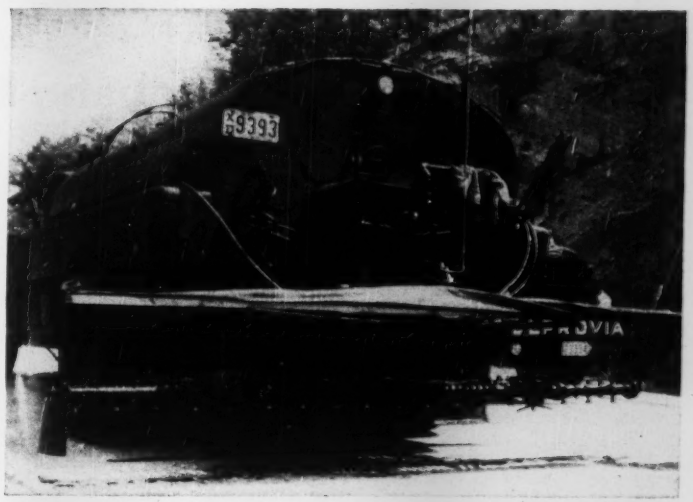
As a result of this discovery, the rate of oil application on the remainder was cut to 1/34 gal per sq yd, which the pavement accepts without becoming slippery.

At this rate the oil disappears from the surface within ten minutes, the pavement is dry within an hour, and its surface does not become slick in case of rain.

On contracts let this year for the first application on new pavements, application is required as soon as the curing period of the pavement has elapsed and before the transferse joints have been filled.

An experiment is being made on the north approach to the Amswille Bridge in the Poughkeepsie district under which the petroleum oil is to be applied immediately after the finishing and brooming of the concrete surface to determine whether it is practical to secure concrete curing and the first application of the waterproofing in a single operation.

These tests have been conducted under the direction of B. D. Tallamy, superintendent of the Department of Public Works. Ira Paul, director of the department's laboratory, was in charge of the initial studies and James S. Bixby is district engineer on the Taconic State Parkway work. The engineer-in-charge is Frank J. Carlon.



SPRAY BAR of the oil distributor showing the extensions to cover the full width of a 12-ft lane at one pass. The plate at the left end is to keep oil off the white curb.

BROOMING the edge of the pavement before spreading the oil to insure a clean surface for the oil application.

Germany's Illfated Autobahn Bridge Rebuilt

Adam Werth
Former Yugoslav and German bridge designer, now with
D. B. Steinman, Consulting Engineer, New York

THIS MONTH, one of the dreams of Hitler and his Public Works Minister Todt will finally come true: Traffic on the autobahn at Mannheim will be able to continue to the west bank of the Rhine over the heaviest plate girder bridge in the world. Bridge rebuilding in Germany, generally, is an aftermath of war damage, but the rebuilding of the Frankenthal Bridge was made necessary by an erection collapse in December, 1940—the worst bridge disaster in the country's history—in which 36 persons lost their lives.

The design of the bridge shows two continuous spans of 482 and 528 ft, and contains many interesting technical aspects. Its construction was begun in 1939, and the erection of the main girders was nearly finished when the collapse occurred.

The wreckage of the long span (the one that collapsed), was removed. Prosecution of the war made rebuilding impossible. The completed 482-ft. span jutted out from the west bank of the Rhine for the next ten years, until in 1949 reconstruction of the other span was begun. This is being rebuilt to only half the original width—two girders instead of four girders wide—since there is neither necessity nor money to carry out the original plan. The erection of the new girders was completed Jan. 15, 1950, and the past eight months have been occupied in finishing the structure and the approaches.

• **The Original Bridge**—The structure begun in 1939-1940 consists of four lines of girders continuous over a central support, and joined by floor beams also continuous transversely through the girders. The depth of the main girders is 21 ft. 9 in. The web thickness varies from ¾ in. to ⅞ in. The flange width is approximately 4 ft, and its maximum thickness 10½ in. Special 1⅛ in. dia rivets were used for grips over 6 in. They had cylindrical turned shanks on ⅔ of their length; the die head was conic. The clearance between rivets and hole diameter was only 1/42 in.

Many tests with several forms of rivets and driving methods were made to find out the best way to connect the unusually large steel sections. It may be said that none of them showed satisfactory results. Indeed, the girder makeup is poorly proportioned and very expensive.

The flooring construction consisted of concrete-filled sag-plates between stringers, with waterproofing and a heavy concrete wearing surface.

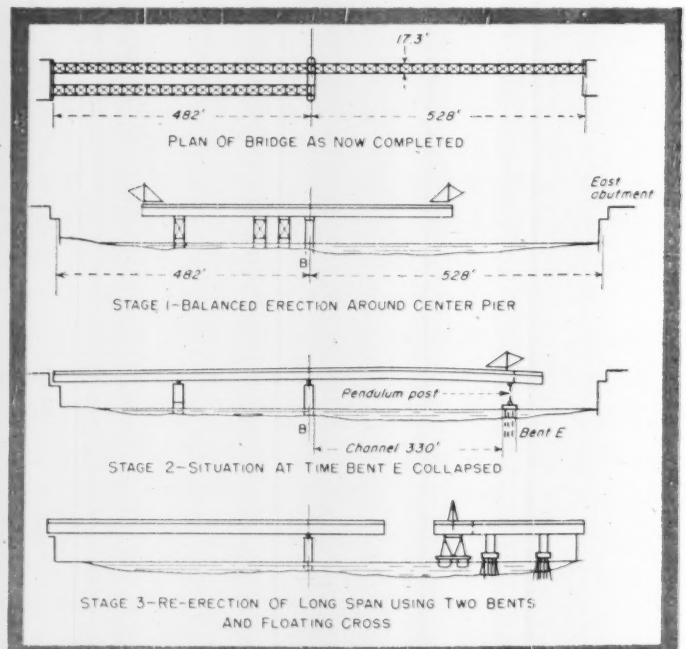
• **Collapse, 1940**—Concerning the reasons of collapse, there were many investigations made by German bridge experts, but no definite statement has been released. An investigation begun by the attorney general was quickly abandoned on the personal order of the Public Works Minister.

In the following the writer presents his own conclusions, based on the study of the available records as well as on the opinions of other engineers who participated in the reconstruction of the bridge.

The navigation authorities required a free channel of 330 ft, which dictated cantilever erection over 370 ft from Pier 3 to Bent E (Fig. 2). At the moment when the superstructure reached Bent E the supporting pendulum post was not quite finished. Nevertheless, the erection of the girders was continued another 46 ft before the construction could be supported as provided. The weight of these supplementary parts was about 300 tons, and the deflection at the end of the girder then exceeded 6 ft.

The day before the construction should have been lifted up and supported on Bent E, the erection superintendent decided to test the equipment. This consisted of two rows of hydraulic jacks under the pendulum post. Contrary to good practice he operated the jacks alternately, raising first one and then the other row 1 in.

By this process the load axis was



ERECTION SEQUENCES on Frankenthal Bridge. Stages 1 and 2 led to collapse. Stage 3 has been successfully completed 10 years later. Note in plan view that rebuilt 528 ft span is only 2 girders wide compared with the four-girder width of the 482 ft span.

moved from the centerline of the post toward the more loaded jack, the eccentricity introducing a horizontal load component. A further eccentricity was caused by the new bending angle of the girder section over the Bent E. Finally, the pilework, which consisted only of vertical piles without any bracing, deflected and contributed still another eccentricity. The resulting total horizontal component was great enough to cause Bent E to collapse.

The steel construction swung several times up and down, and then the main girders broke in the weakest section—near the dead load point of contraflexure.

• **Reconstruction 1950**—The structure of the western span was only slightly damaged by the accident and could be repaired without dismantling. The broken parts of the eastern span had to be removed to open the river channel to navigation, and were mostly useless for the reconstruction of the bridge.

Since it had been decided to rebuild only the northern pair of main girders in the eastern span, there resulted a complicated framing arrangement at the center pier where the four lines of girders in the western span joined the two lines in the eastern span. Detailed investigations proved that expensive supplementary construction was necessary to enable such a structure to function. Therefore, it was decided to separate the western span into two halves of 2 girders each, by cutting the floorbeams on the centerline of the bridge.

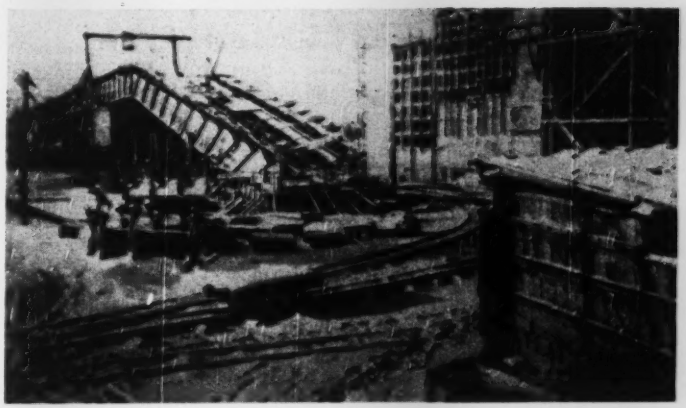
The new bridge then represented the simple case of two continuous girders—complicated, however, by the exceptionally small ratio of the main girder spacing to the total width of the bridge and to the span. The consequence was that the main girder stresses due to torsion and to horizontal loads were much greater than in the original structure. Since the girders could not be reinforced, other remedies were required to reduce these stresses as follows:

1. Horizontal struts were installed between the main girders near the top and bottom, forming a rectangular tube, rigid against torsion.

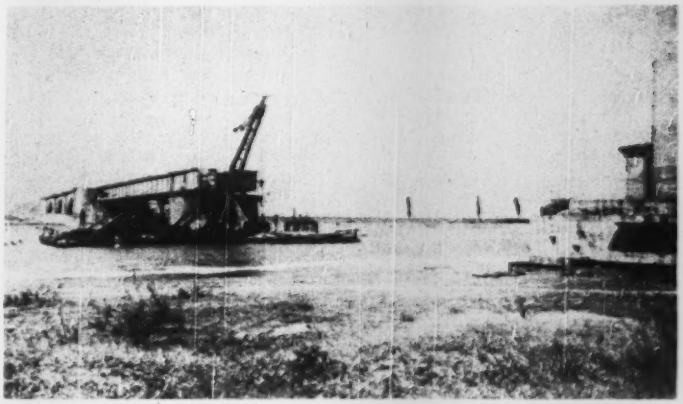
2. The flooring construction (stringers and floor sheets) was enabled to carry axial forces by connecting it to the main girders at the end points over the abutments and at the points of contraflexure for dead load. Thus the main girders receive a third chord. The stress-reducing effect of this measure is only about 8% of live load, but the stiffening effect is quite important.

The connection of floor constru

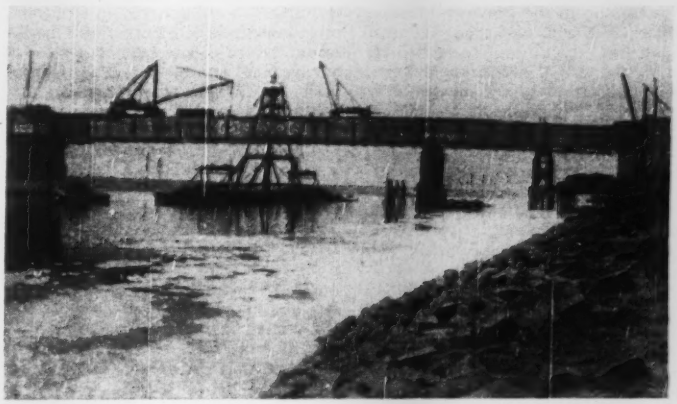
HISTORY OF A BRIDGE



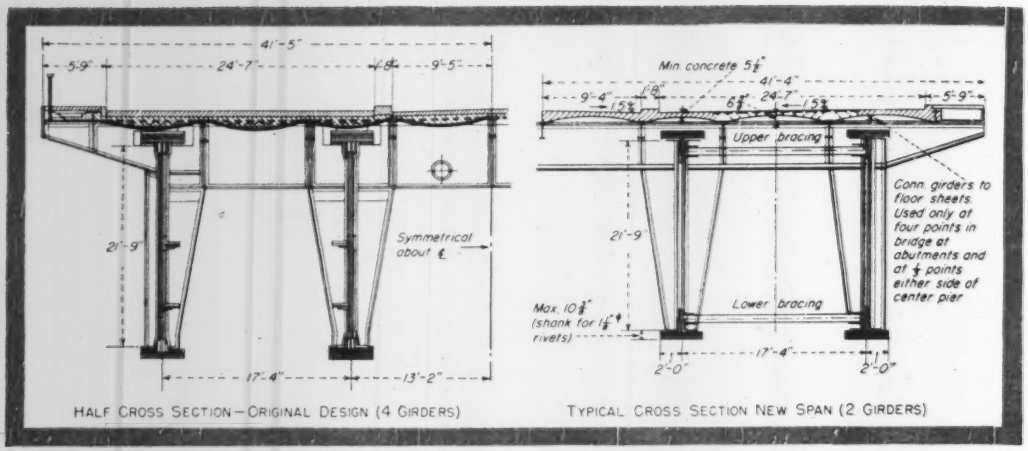
1940—COLLAPSES into Rhine, ending Hitler's dream of having world's longest plate girder span—628 ft—and extending autobahn to west bank of river.



1941-1949—ABANDONED after debris of wrecked span was cleared away, undamaged span remains a reminder of disaster.



1950—REBUILT, using different arrangement of falsework and floating cranes in place of bold cantilever method that did not work.



NARROWER WIDTH of new span (2 instead of 4 girders wide) required introduction of bracing between girders and use of arched steel plate floor, connected to girders for additional stiffening. Floor concrete is prestressed.

tion and main girders permitted the prestressing of the floor concrete. To accomplish this, the main girders were cambered about 2 ft over the center support during erection and then lowered to horizontal after the concrete hardened. In this way compression was produced in the floor concrete, which avoids transversal cracks due to live load tensile stresses.

Another remarkable characteristic of the floor construction is the first adoption of arched floor sheets (Fig. 3) stiffened by a reinforced concrete slab. The old hanging sheets, as contemplated in the original design, were simply turned over. The slab moment of inertia in the section over the supports (stringers) was thus made great enough to avoid greater tensile stresses, and thus also longitudinal cracks on the surface of the slab. The security against cracks in the concrete is a very important factor, because the slab has no waterproofing nor wearing surface.

Such a flooring is much cheaper, lighter and more durable than the old one as planned for the original bridge. In the computation of the main girders the concrete section is neglected. Only the steel members, i.e., the stringers and floor sheets are considered parts of the third cord.

Care Is Key to Atom Waste Disposal

Extreme care is the key to the system of disposal of radioactive wastes produced at installations that are part of the U. S. Government's atomic energy development program.

According to the Public Education Office of the Brookhaven National Laboratory try-out on Long Island, N. Y., the task of protecting the general public from injury and property damage is accomplished by extension of careful techniques that achieve a safety record within AEC plants and laboratories, and by special methods.

• **Two methods**—Broadly speaking, there are two methods of controlling wastes: Concentration and storage, and dilution and dispersal.

At Brookhaven, the sewage disposal system attempts to reduce the amount of waste and then to monitor discharges to assure their harmlessness.

Reduction of waste volume starts in the laboratory, where research workers set aside "hot" wastes in labeled bottles and limit the amount of radioactive material they pour down the drains. Water from these sinks however, passes first into a holdup tank where automatic equipment collects a continuous sample, and then into the sewer system. Brookhaven waste water is tested twice more before it flows into uncontrolled drainage, at a pool where sewage is subjected to a standard bacterial treatment and at a sand filter bed. (Too-high concentrations in the holdup tank call for special disposal.)

• **Survey groundwater**—As an additional safeguard, Brookhaven conducts continuing studies of the geology and water table underlying central Long Island. Survey teams drilled seven wells varying in depth from 200 ft. to 1,600 ft to analyze samples of surface and underground water for chemical content and natural radioactivity and to study the direction and speed of groundwater flow.

• **Air is checked**—If the cooling air used in the reactors carry particles or dusts, some of this material might become radioactive. To avoid this, air is filtered both before and after it passes through the reactor.

One natural constituent of the air—the inert gas argon—presents a problem of radiation control. Part of this gas becomes radioactive. This gas will be highly diluted before it leaves the reactor; rapid further dilution is accomplished by discharging the cooling air from a high stack with the pressure of the blowers behind them.

If weather conditions threatened to cause a poorly dispersed flow of reactor gases over one spot long enough to raise the radiation exposure above the permissible limit at ground level, the reactor would be shut down.

• **Monitoring stations**—Sixteen radiation monitoring stations have been in operation for some time at Brookhaven to make continuous records of radiation levels in the air for miles around. Six stations are on the laboratory site, four are in the cardinal compass directions 2 and 4 miles from the reactor stack, and six 7 and 9 miles out.

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HEAVY EQUIPMENT moves part of the more than 3,000,000 cu yd of earth work required on Lakewood Park project.

DITCHER excavates foundation sites. Small tractor with scraper takes excavated material away from building site.

Building 17,000 Homes in 18 Months

Editor's Note—Since this article was written, presidential announcement of curtailment on federal home credit programs has been made. This is bound to have an adverse effect on the Lakewood Park development. This project is made feasible by small down payment and low monthly installment payments. Lakewood Park developers have made no announcement of curtailment of operations to date, however.

THE CONSTRUCTION of 17,000 low-cost homes in 18 months in a single tract development has provided a spectacular start on a southern California project destined to be much bigger. In an area where home building is frequently done on a large scale, this new development—Lakewood Park—is the largest yet undertaken; probably the biggest tract development in construction history.

Engineering problems are of a size with the size of the development: For example, more than 3,000,000 cu yd of earthwork is involved for drainage; street layout; water supply, and sewerage for 50,000 people also require complex engineering work.

Construction operations are as complicated as any $135 million job would be. The work has a marked impact on available materials and man-power.

Lakewood Park is a 3,400-acre tract some 20 miles south and east of the center of downtown Los Angeles, just out of Long Beach, Calif. The homes are two- and three-bedroom size with floor areas of 850 and 1,050 sq ft, respectively. Sales price ranges from $7,575 to $9,075, and houses are being sold before completion.

• Impact on construction—A job of this sort cannot help but have a terrific impact on construction. For example, one contractor, who is building about two-thirds of the homes, has almost 2,000 construction employees on his payroll. In all of California in April there were only 173,200 construction workers working on contract jobs (according to California Department of Employment figures). Thus, one contractor at Lakewood hires 1% of the California construction force.

Such large-scale employment causes shortages in qualified workers—so much so that some southern California contractors (not particularly the Lakewood people) have resorted to offering workmen above-scale wage rates and special bonuses.

Lakewood has a similar effect on available supply of materials. Because of the large volume, suppliers naturally take care of the Lakewood contractors. Result: Smaller operators are reported to be resorting to bonus payments to materials dealers for lumber, plumbing and other hard-to-get materials.

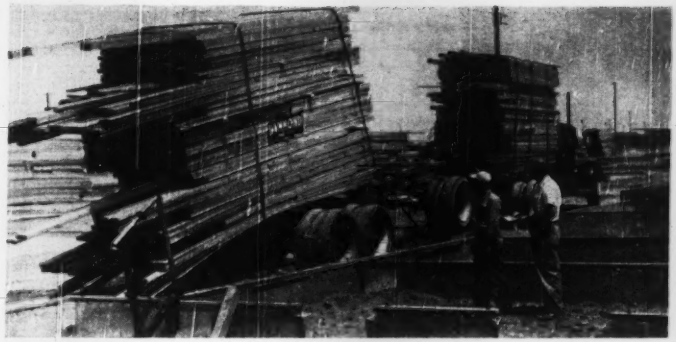
To accomplish their goal, Lakewood Park contractors will have to start about 1,000 homes a month, which means that one out of every 100 homes started in the U. S. this year will be in Lakewood Park.

Further impact of this type of development is felt in agriculture. For almost every year during the last decade or more, Los Angeles County has had more agricultural income than any other county in the United States. However, with Lakewood Park and other developments taking more and more of the agricultural area out of production, Los Angeles County last year fell to second place behind Fresno County.

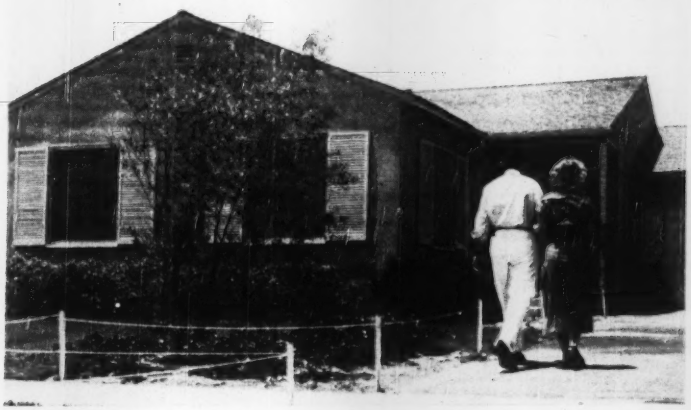
• Drainage is difficult—Biggest engineering problem at Lakewood Park is providing adequate drainage. Although rainfall is not large as far as annual

LAKEWOOD PARK STATISTICS

Number of homes—17,000
Tract area—3,400 acres
Project value—$135,000,000
Homes:
2-bedroom—850 sq ft
Price range—$7,575 to $8,225
3-bedroom—1,050 sq ft
Price range—$8,525 to $9,075
Streets—380 miles
Pavement width:
Major highways (1 mi apart)—76 ft
Secondary highways—56 ft
Collector streets—36 ft
Local streets—30 ft
Water supply—wells 1,000 ft deep
Distribution system—cast iron pipe, from 4 to 16 in. min 40 psi
Sewers—340 miles
Disposal by Los Angeles County Sanitation Districts
Main sewers—30 to 36 in. reinforced concrete pipe total 2½ mi
Collector sewers—8 to 27 in. vitrified clay pipe
Gas—Southern California Gas Co.
Electricity—Southern California Edison Co.
Telephone—Associated Telephone Co.
Major Contractors:
Homes—Aetna Construction Co.
—Biltmore Homes
Grading and paving—J. A. Thompson & Son
—H. B. Adair Construction Co.
Engineering:
General—Engineering Service Corp.
Soils Testing—Donald R. Warren Co.



PRECUT LUMBER is delivered by the truckload with one load just enough for one house.



FIRST FAMILIES are now occupying homes in the Lakewood Park area. Here is one of the 17,000 that are to be built in the next 18 months.

total is concerned, occasional heavy downpours make drainage of developed land important. A complicating factor is flat nature of the Lakewood tract. Main carrying medium for storm water runoff is the streets. These drain into storm drains at strategic locations with curb openings being 14 to 21 ft wide. Storm drains connect with two gunite-lined channels (capacity 1,600 and 1,400 cfs) that go to the Los Angeles River 4½ miles away.

The storm drain system is designed on a 15-year probability curve. Engineers figure that it will actually accommodate a 50- or a 100-year probability storm. Their calculations indicate that a storm of 250-year frequency is required before water reaches the vent openings in the houses.

To make the streets carrying channels, they are excavated as much as 3 ft below the original ground surface. This excavated material is spread on the building sites and compacted. Here, builders called in a soils engineer, since it was extremely important to know just how much volume the excavated material would occupy when compacted. Thorough compaction is necessary because the homes are being built immediately following grading.

Engineering forces included 70 designers, computers and draftsmen in the design stages. Some 20 engineers are now involved in keeping the work going. Besides this from 15 to 20 surveying parties are continuously engaged in laying out lots, streets and houses and setting grade stakes.

Another major engineering job was to coordinate the desires of all of the governmental agencies involved. These included the following Los Angeles County units: Road Department, Health Department, Park Department, Storm Drain Department of the county engineer's office, Los Angeles County Sanitation District, Los Angeles County Flood Control District and the Los Angeles County Planning Commission.

• **Construction organization**—The developers employed several contracting firms. Two specialist firms are doing the home construction (see accompanying table). Aetna Construction Co. is involved in the most work, constructing about two-thirds of the units. They alone will have almost 2,000 construction workers. Besides that, they employ many subcontractors for such things as plumbing and painting with many more employees involved. They plan their construction rate at 250 homes a week.

To achieve high production, many time and labor saving steps are used. For example, ditchers excavate bearing wall foundations. Standard reusable forms are quickly placed and two or more truck mixers deliver concrete to each housing site. With such a system more than 50 foundations a day are constructed.

Plumbing assemblies are shop built. All lumber is precut and stacked so that one truck load contains enough material for the framing of one house. Shingles are placed on the roof by means of conveyor belt.

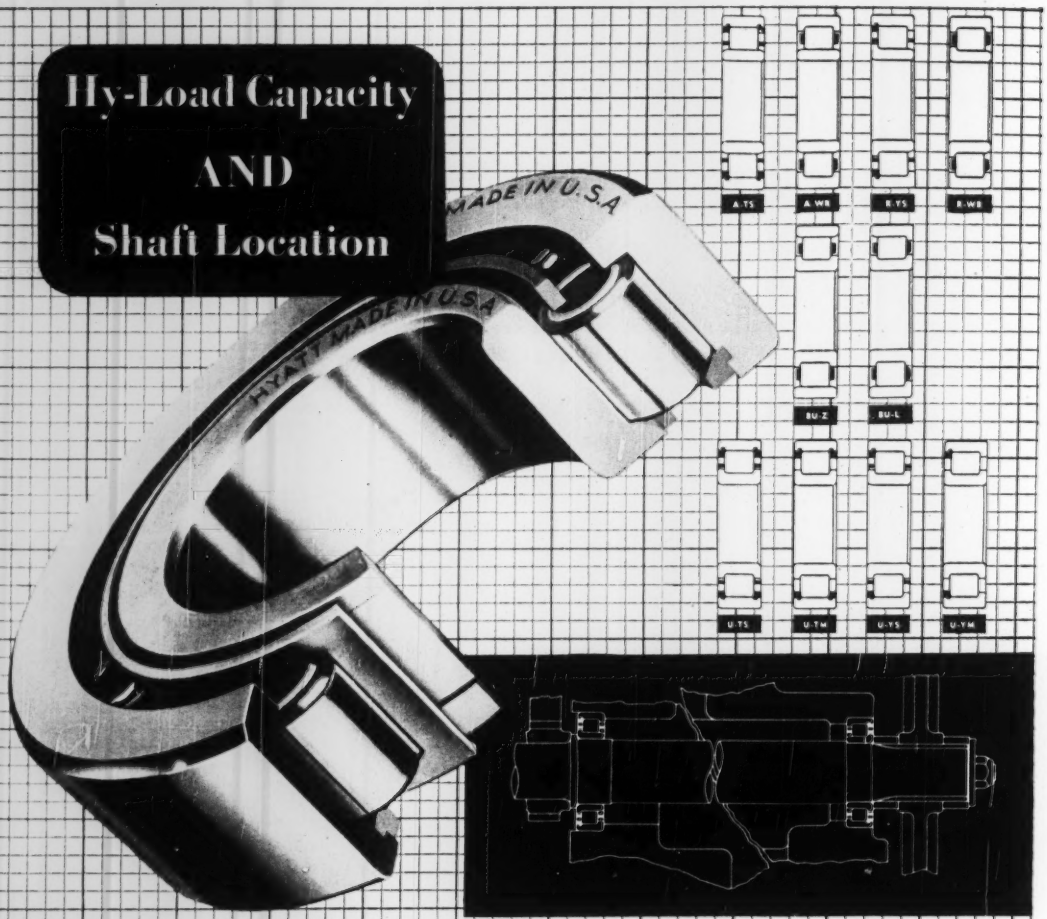
• **Sales staff important**—To make such a development feasible requires a large high-pressure sales organization. In just over 2 weeks after the tract was open for sales in April, 800 homes were sold. A level of 250 a week must be reached to keep the program going. Large-scale radio and newspaper advertising and many salesmen make high-volume sales possible.

However, the key to the development is the several government insured financing programs. For example, veterans need make no down payment, paying only the closing and escrow fees of a maximum of $155. Then their monthly payments are as low as $46.98 to cover principal, interest, insurance, and taxes. They can also include a stove, automatic washer and refrigerator for about $1 a month.

Each home is provided with a garbage grinder, thus eliminating the necessity of a garbage collection system. Each home will be responsible for its own combustible rubbish (probably in a backyard incinerator). Non-combustible rubbish will have to be picked up.

Lakewood Park is being developed by Lou Boyer, a private entrepreneur in the Los Angeles area. Mr. Boyer has several associates in the development with him that have put up $40,000,000 or $50,000,000 of their own money. All sales agencies, construction firms, engineering firms and the like work on a contract agreement with the principal developers.

Hy-Load Capacity AND Shaft Location



The cut-away bearing illustrated is an "R-YS" type Hyatt Hy-Load Bearing. It not only provides the high radial capacity of a cylindrical roller bearing but when mounted in pairs, opposed as shown in the drawing above, will also locate shafts.

In the Hyatt Hy-Load line of cylindrical roller bearings there are ten different types, each designed to fulfill specific application needs. Of these ten types, four are made with separable inner races, two with separable outer races and four are non-separable, thus permitting wide flexibility in machine design and assembly procedures. A wide range of sizes are made in every type.

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Full information about Hyatt Hy-Load Roller Bearings is contained in our Catalog 547 . . . a complete engineering guide to radial bearing selection and use. Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.

HYATT ROLLER BEARINGS

EXTRACTED PILE after being cut into three sections as it was withdrawn from the ground. The stiff bluish clay remained intact between the flanges of the lower section (left center) despite the shearing action of the jacking frame. Soft mixtures of clay and humus dropped out of the upper parts of the pile as it was being withdrawn.

Extracted Steel H-Piles Found in Good Condition

G. G. Greulich

Consulting Engineer, Specialty Products Division, Carnegie-Illinois Steel Corp., Pittsburgh, Pa.

TWO STEEL H-PILES, driven several years ago for test purposes at widely separated points, were extracted recently by the Carnegie-Illinois Steel Corp., to determine how much corrosion had taken place. At the same time, other information was obtained having a bearing on the use of such piles under similar soil conditions.

One of the piles examined was in a group of eight that had been driven in a swamp alongside a highway near the Bonnet Carré Floodway in Louisiana, and the other was at the turning basin in the harbor at Houston, Texas.

The Louisiana pile, a 12-in., 65-lb steel section, had been driven 17 years ago to a depth of 122 ft 3 in. below ground level, which was 116 ft below sea level. For the last foot of penetration, 44 blows were required with a Vulcan No. 1 steam hammer. The material penetrated ranged from a blue sandy clay at the surface through fine sands, humus with some sand and then through clays with some sand to stiff blue clay for the last 38 ft.

When this pile was withdrawn the looser soils fell out of the space between the flanges, but the cohesive soils remained in place, taking the form of a roughly circular plug. When this material was checked against the log of test borings made nearby there was close agreement, showing that the pile, during driving, had cut through the layers and did not carry with it a hard plug from near the surface as happens when such piles penetrate hard layers near the surface.

This phenomenon explains why H-piles are not especially efficient as friction piles in soft-cohesive soils, whereas they perform well as friction piles in hard cohesionless soils. When a hard plug does form, it adds materially to the end-bearing capacity of H-piles.

In this case, the adhesion of the soil to the pile exceeded the cohesion or shear value of the soil itself.

No measurable corrosion was found on the pile although two of the soil strata, selected at random, were proved by a National Bureau of Standards test method to be corrosive to steel when in the presence of oxygen. Red-lead paint on the tip was as fresh as new. White painted footage numerals on the flanges also had a new appearance. What appeared to be a roughened zone for a length of 30 in. over the range of the fluctuating water table (about 5 ft below the surface) developed on laboratory examination to be a thin, hard mineral crust.

• **Load Supporting Value**—While this pile at the time it was driven supported a test load of 98 tons 20 hours after driving with a settlement of 0.35 in., 17 years later an uplift of 125 tons produced an upward movement of only 0.25 in., or about two-thirds of the load-test settlement.

Assuming that the uplift force ranged from maximum at the top of the pile to zero at 30 ft from the bottom, the 0.25 is equivalent to the elastic elongation of the steel. The uplift force had to be increased to nearly 300 tons to secure an upward movement of 1.75 in., and calculations indicate that the bottom started to move upward at a load of 180 tons.

Based on a pile length of 122 ft and a net perimeter of 4 ft 4 in. for the plug of soil extracted with it, the

CORROSION OF STEEL H-PILE AS A RESULT OF

Twelve Years of Exposure to Mud and Water

	Thickness, inches			Average loss in thickness from original nominal, inches
	Max	Min.	Average (5 readings)	
Right flange	.631	.605	.617	.071
Left flange	.640	.625	.633	.055
Web	.404	.401	.403	.035

Original nominal thickness of flanges was 0.688 inch

Original nominal thickness of web was 0.438 inch

average shear value of the soil is 680 lb per sq ft of plug surface up to the 180-ton load for which the rate of extraction was proportional to the pull, and 1,130 lb at incipient rupture as the load reached the peak of about 300 tons and resulted in an upward movement of 1.75 in.

This pile was extracted by the W. Horace Williams Co. of New Orleans under the direction of the writer.

• **Test pile at Houston**—A steel H-pile was driven in August, 1937, at the site of the proposed wharf No. 9 in the Harbor Turning Basin at Houston. It was a 12-in. 72 lb pile driven to a resistance of 185 blows of a No. 1 Vulcan hammer for the last foot of penetration, which was to a depth of 72 ft through various layers of sand and clay.

After driving, the pile was braced and a sand box was erected on steel brackets to permit a test load of 100 tons to be applied. This load was maintained until May, 1938 at which time the total settlement, including elastic compression in the pile was ⅜ in.

Shortly thereafter the bracing of the pile was removed to permit it to sway slightly, as it would in a wharf, to determine whether such movement would accelerate settlement. When no further settlement had occurred by June, 1939, the test load was removed.

When first driven, this pile was at the edge of the shoreline, just away from the water, but in subsequent years the earth was removed to a depth of six feet and the pile used as a mooring for barges. This resulted in its being bent back and forth at a point three to four feet below the mud line, and finally it was bent down out of sight below water by a barge. From this position the upper part was recovered by breaking it off with a clamshell bucket at the point where initial fracture had started due to the bending.

Examination of the straight part of the recovered piece, which was between one and two feet below the mud line and which seemed to be corroded as much as any part of the pile above the point of recovery, revealed the conditions shown in the accompanying table as a result of over 12 years in mud and water.

The average corrosion rates of the upper end of the sample, calculated from the original nominal thicknesses, were 0.0026 in. per year on each surface of the flanges.

Based on a 65-ton service load on this pile, which would result in about 6,000 lb per sq in. unit stress, eleven-seventeenths of the metal could be lost before the unit stress in the pile, acting as a fully supported column, would reach 17,000 lb per sq in. unit stress. To reach this condition would take 85 years for the flanges and 95 years for the less exposed web, the former determining the minimum useful life expectancy at this location. The actual life might be much longer because ordinarily the rate of loss by corrosion decreases since the products of corrosion tend gradually to produce an inhibitive incasement.

Assuming that the load test on this pile had been carried to a total test loading which would permit a safe design load producing an initial stress of 9,000 lb per sq in. on the pile, or a load of 98 tons, the expected life at this location would be 62 years. This is based on losing eight-seventeenths of the pile metal by corrosion of the flanges at the annual rate previously given, before the unit stress in the pile would reach 17,000 lb per sq in.

As a result of these findings, steel H-piles were used in the wharf when it was built in the fall of 1949.

Notes on Legal Decisions

Summaries of decisions relating to construction prepared by I. Vernon Werbin, counselor at law and engineer, New York, author of Legal Phases of Construction Contracts (McGraw-Hill)

Architect's Fees

Where the contract for the payment for architectural services rendered in connection with the remodelling of a building provided that it was to be paid for on the basis of a certain percentage of the cost of doing the work, the architect was not entitled to recover on the basis of a percentage of the lowest bid submitted, where the owner did not proceed with the work in accordance with the plans prepared by the architect.[1]

In this case the owner did not do the entire job as originally planned because he could not raise the necessary funds. Instead, he spent $6,800, which was less than the low bid. The contract with the architect provided that he was to receive for his services a fee of 10% "of the cost of the work." In an action brought by the architect to recover for services on the basis of 10% of the lowest bid submitted, the court only allowed a recovery of $680.

In another case,[2] where the lowest bid submitted exceeded the upset cost as fixed by the owner and the owner did not proceed with the work, the architect was denied any recovery.

The court in its opinion stated: "There is nothing in the terms of the contract which provides that the total fee of the architect would be 10% of the amount of the bid. The fee depends upon the letting of the contract. The architectural fees were based upon the total amount it would cost to do the work according to the terms of the construction contract. Apparently the form of the contract here used was drafted to cover a case where the owner actually let a building contract; but it did not cover the case before us, where no building contract was ever executed. To sustain the claim of plaintiff [architect] it would be necessary to hold that no matter how large the bid for doing the work, Roberts [owner] would have been obligated to pay any architectural fee based upon the amount of such bid. The contract does not so provide, and Roberts [owner] did not so agree."

In view of the above cases it would be well for architects and engineers when entering into contracts for the payment for services based on a percentage of the cost of doing the work, to make some definite provision for compensation in the event the owner for any reason fails to proceed with the work.

(1) Loyal Order of Moose v Faulhaber, 41 N.W. 2d 535.
(2) Wetzel v Roberts, 295 N.W. 580.

Waiver of Defects

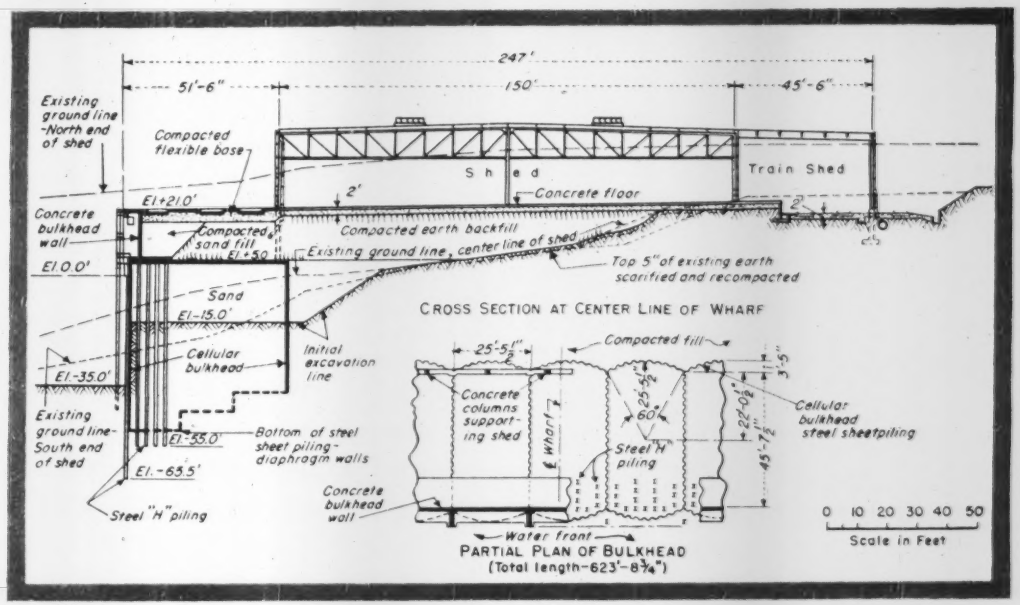
Where a contract is made with the owner of realty to erect a building on the land and the builder fails to comply with the contract requirement that the structure shall be built in a good and workmanlike manner, neither the occupation of the house by the owner after its supposed completion, nor the payment of the contract price, even though payment is made after the owner has knowledge of the defective construction, is sufficient, taken alone, to operate as a waiver of the breach of the convenant to erect the building properly.[1]

(1) Sparling v Housman, 214 P. 2d 837 (District Court of Appeal, Cal., Feb. 28, 1950.

Varying Written Contract

"It is elementary that a written contract may, in the absence of statutory provisions requiring a writing, be modified by a subsequent oral agreement."[1]

(1) Good v Green, 90 F. Supp. 316 and cases there cited.



Cellular steel sheetpile bulkhead is principal feature of . . .

Houston's Money-Saving Wharf Designs

Port of Houston spent a little on engineering investigations, saved a million dollars.

Frank H. Newnam, Jr.
Partner

Mason G. Lockwood
Partner

Lockwood & Andrews
Consulting Engineers
Houston, Texas

By using cellular-bulkhead design types instead of the concrete-pile and structural-deck type conventionally used in this area, the Port of Houston is saving $1,000,000 on the construction of two wharves whose total cost is little more than $2,500,000. The new wharves are modern, permanent-type structures, functionally equivalent to the former design and of equal safety factor.

The large saving was made possible by complete soils investigations, detailed preliminary design studies, careful economic analyses and especially by exploiting the potentialities of engineering—soundly applied but not bound to conventional designs.

Wharf 9, the initial unit of the new development was completed and placed in operation in March 1950. Wharf 16, the second of these structures, was commenced immediately after completion of the first. It is scheduled to be finished early in 1951.

Wharf 9 is situated at the head of the ship channel's 1100-foot wide turning basin. The structure proper is 500 ft long, with a cross-section as shown in the drawing.

• Cellular-bulkhead design—The principal innovation of the design is a series of interlocked steel sheetpile cells, similar to those used in conventional cofferdam construction. These cells serve as a bulkhead behind the fender system and under the entire apron. The upper part of the cells is filled with compacted sand to provide rigidity.

A concrete wall supported on steel bearing piles extends from the top of the cells at the water line up to the apron, providing the harbor face of the wharf. Compacted earthfill, above the top of the cells and behind them, forms the foundation for the apron, shed floor and superstructure. This affords virtually unlimited allowable concentrated loadings on these paved areas, although the structure is designed for a uniform apron and floor loading of 500 psf, plus railroad loads on the tracks.

The front of the cells extends well below the mudline of the harbor and thus serves as an effective cutoff against the subsoil seepage, or wash, that proved detrimental to an adjacent wharf.

• Design change for Wharf 16—Wharf 16, the second unit, is located at the downstream entrance of the turning basin. It has: 600 ft of frontage; an apron 18 ft above mean low tide; 36 ft of water depth and 40-ft design depth; and, two railroad tracks

on the apron. This wharf contains 123,070 sq ft of paved area for open storage, designed for 500 psf uniform loading (there is no shed).

This substructure likewise consists of a cellular sheetpile bulkhead behind the fender system. It differs from Wharf 9, however, in that deeper cells of heavier-section piles are required because the cells extend up almost to the apron floor. There is no concrete wall at the front and hence no bearing piles are needed. Compacted sand is used for the interior fill in order to impart required stability to the bulkhead. In the area behind the cells, vibrated sand is used below the waterline, and earth-fill compacted with sheepsfoot rollers is used above the water line. The concrete paving is placed directly on the compacted fill, permitting the almost unlimited concentrated loadings mentioned for Wharf 9.

• Bids show great savings—Alternate construction bids were solicited in 1948 for Wharf 9 on: (1) Cellular-cofferdam type and (2) Concrete-pile and structural-deck type. Farnsworth & Chambers Co., Inc., of Houston, was low, at $1,734,693, among three bids based on the cellular-cofferdam type. This was $404,476 less than the lowest of four bids that were submitted on the concrete-pile and structural-deck design.

Guaranteed completion time for construction favored the latter type by 100 calendar days: 450 days having been bid for it as against 550 days for the cellular cofferdam type. The time differential was attributable to the then unsatisfied demand for steel sheetpiling.

A carefully redesigned transit shed, incorporated into both plans prior to bidding, effected a $65,000 saving not reflected in the difference between the low bids for the two types of wharf. Thus, the total saving directly attributable to the new design for Wharf 9 is about $470,000.

Release of Wharf 16 plans produced some spirited competition among five well-known contracting firms, each of which agreed to the specified 10½ month completion time. The builder of the first new wharf again was the low bidder, at $811,805—considerably below the consulting engineers' estimate—and was awarded the contract on the cellular cofferdam type construction for Wharf 16.

A conventional concrete pile and structural deck wharf, in lieu of the above, was estimated to cost $1,350,000; hence no alternate bids were solicited on that construction type. The Port's saving on Wharf 16 therefore is some $540,000 through use of the new design carefully "tailored" to the particular site conditions.

Total savings of $1,010,000 in the construction cost of its two new-style wharves thus is being effected by the Port of Houston in construction expenditures aggregating $2,550,000. This magnificent economy in capital costs is the direct result of the Port's: (1) dogged determination to develop a design for a wharf of lower average annual costs and (2) vision in authorizing modern and thorough preliminary engineering investigation and analyses at the "risk" of some $35,730 for the extra engineering expense it involved.

• How the design developed—It was in 1948 that the Port of Houston's Board of Commissioners made the decision to find a way to construct more economical wharves without resorting to temporary or so-called semi-permanent types of construction.

First, the commission, with Col. W. G. Saville as chairman, tackled the Wharf 9 project. This facility was to replace two adjacent old timber wharves that eventually failed when an underlying stratum of fine sand, 30 ft below the water, washed out into the harbor.

The engineering staff of the port prepared plans for the proposed new wharf, employing the open-type substructure that had been used successfully in the area, with the mudline cut back underneath the wharf at a 1-on-3 slope. The apron and transit shed were to be supported on a structural concrete deck founded on concrete piling. The transit shed plans called for a riveted steel frame and concrete roof.

Preliminary estimates for this design were discouraging under 1948 construction-cost conditions, so the Commission directed Vernon Bailey, director of port operations, to engage the writers' firm to develop, if possible, an equally satisfactory but more economical design.

This firm, with the assistance of S. J. Buchanan, its consultant on soil mechanics and foundation engineering, and former head of soils mechanics research for the Corps of Engineers, obtained tests on undisturbed samples taken from extensive soil borings at the site. Utilizing these data, the consultants made engineering studies on four new types of design, as well as on the conventional concrete-piling type. The final recommendation of the report was that the cellular steel bulkhead type of substructure with a front concrete wall appeared to be the most economical type for the site conditions, consistent with modern design, high stability and permanence. Redesign of the transit shed also was recommended. Both recommendations were adopted; the consulting engineers completed designs, handled bids and supervised construction.

• Wharf 9 construction—L. D. Frazier was superintendent for the contractor on the Wharf 9 job (also on the second wharf) and E. A. Brinkman was resident engineer for the consulting engineers. Initial work consisted of removing existing soil at the north end of the Wharf 9 site to El. −15 ft. This was done to facilitate driving the sheetpiling in this most stable section of the site and to minimize the risk of driving the piles out of the interlocks. (Piles penetrated tough clay, had to be jetted as deep as to within 5 ft of grade.) The pre-excavation also permitted filling inside and behind the cells with compacted selected clean sand vibrated into place to produce stability higher than that of the undisturbed soil. At the south end of the site the mudline was below El. −15 ft, and there it was necessary to remove only the muck prior to driving the cells, which drove easily.

Cells were constructed of type M 112 sheetpiling formed around templates and driven by conventional methods used for cofferdams of the type.

After enough cells had been driven, the steel bearing piles were driven in the front portion to support the front concrete wall. Cells then were filled with sand, as was the area behind the cells, up to El. 4 ft.

The sand fill was placed in 5-ft layers, special care being taken to insure that the differential between the top of the sand in adjacent cells was not more than 5 ft at any time. Each layer was vibrated with concrete spud-vibrators to insure a predetermined minimum density, which afterwards was verified by tests. After the sand fill had been completed up to El. 4 ft, the front concrete wall, with buttresses on the harborside, was formed and poured so as to rest on the bearing piles. The wall also was interconnected to the front row of the sheetpiling in the cells.

Following wall completion, the remaining fill, from El. 4 ft up to the apron and warehouse-floor-slab elevation, was placed with the aid of sheepsfoot rolling and optimum-moisture control. Concrete slabs were placed by normal paving methods, directly upon the compacted fill and a sand-shell sub-base. The 500 x 150 ft warehouse is of steel frame and truss construction.

• Wharf 16 has no shed—The second of the two wharves also is of marginal

type, with a paved area extending back more than 200 ft from the fender line. Since Wharf 16 will be used for open storage, no shed structure is contemplated. It will be necessary to construct a trestle connecting to land on the high bank immediately south of the wharf so as to permit proper switching of cars for loading and unloading.

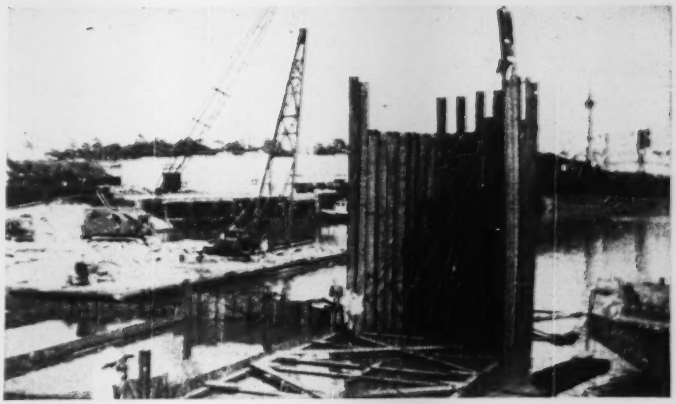
As in the case of the first wharf, the firm of Lockwood & Andrews was engaged (by Gen. W. F. Heavey, general manager of the Port) to arrange for a program of soil borings and tests on undisturbed samples from the site and to make engineering and economic studies of wharf-construction types.

A cellular bulkhead type substructure again was recommended. However, this pier was to have design features somewhat different from those of Wharf 9.

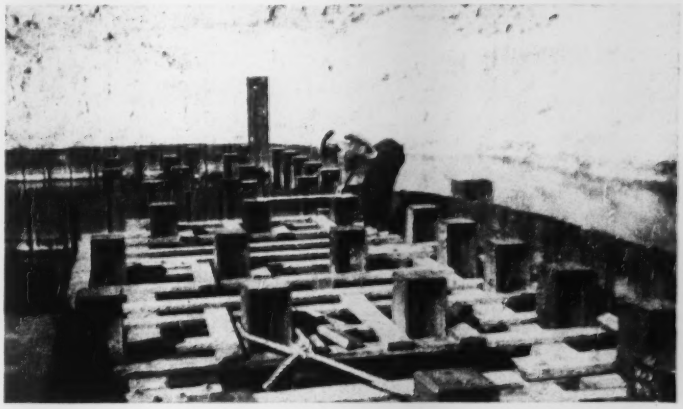
• **Another possibility for Houston conditions**—The Port directed that contract plans and specifications be prepared jointly by its engineering department and the consulting engineers, covering two types of designs studied in the preliminary report: (1) The cellular bulkhead type recommended, wherein sheet steelpiling of a heavier type than in Wharf 9 is employed and with larger and deeper cells carried up to just below the pavement slab, and (2) An unusual type of bulkhead design which was considered in the report, wherein Z-type piling form a front bulkhead, but are tied back to a common anchorage system with two levels of tie rods.

In both of the designs back-fill is vibrated sand up to El. 4 ft and inside all cells, and compacted earth from that elevation up to the bottom of the pavement slab. Through experiences, observations, and tests made during the construction of the first cellular structure, it was possible to incorporate many improvements into the plans and specifications for this second wharf. The award went to cellular construction.

Wharf 16 is currently under construction under the supervision of the engineering department of the Port, with J. A. Nash of that office serving as resident engineer. The consulting engineers are furnishing consultation services during construction. The wharf is scheduled for completion about March 1, 1951, and will provide a much needed addition to the flexibility of the facilities of the Port of Houston, to meet its increased needs for open wharf space for cargoes of lumber, pipe, heavy machinery and other bulk cargoes.



SHEETPILE CELLS driven around floating timber templets establish basic strength of Houston's new-type marginal wharf for ocean-going ships.



H-PILES WITHIN CELLS at waterside support concrete wall that retains wharf's compacted fill. Timber templets positioned these piles, too.

ROLLED FILL is placed behind finished concrete wall. Cellular bulkhead lies below outer portion of fill.

Soil-Cement Stabilizes Florida Levees Damaged in '49 Hurricane

Joseph L. Harvey
Corps of Engineers, Jacksonville, Fla.

SECTIONS of Lake Okeechobee levee —badly beaten by the hurricane last August—now stand ready for this year's storm season. First-aid treatment for damaged portions was applied immediately after the storm. (ENR Oct. 20, 1949, p 37), and permanent slope paving with soil cement followed to prevent future erosion.

Soil-cement was chosen for the simplicity of the process and availability of needed equipment. Speed was the prime factor since the '49 hurricane season was not yet over and the recently filled slopes were vulnerable to further damage.

(Choice of the stabilization method was not based on engineering studies, for these had not progressed far enough at the time to prove anything. In 1940, experimental sections of levee were stabilized with plant mix, penetration and mixed-in-place asphalt and with soil-cement. Now, ten years later, all slopes are in excellent condition, showing no apparent advantage for one type of stabilization over the others.)

Plans and specifications were issued, and bids were opened only seven days later. R. H. Wright & Son, Fort Lauderdale, Fla., won the contract at a price per sq yd of $0.8436 for the 51,000 sq yd.

• **The material**—Aggregate for the 36,000 sq yd of east shore levee to be stabilized was principally a sandy marl with shell and limerock and very little free sand; that for the 15,000 sq yd north shore section was mostly sand with varying amounts of shell. At the time the bid invitation was issued, it was anticipated that the east shore would require about 8% cement by volume and the north shore about 12%. Results of tests on soil samples which had been submitted to the Chicago laboratories of the Portland Cement Association later caused increases in these estimated quantities of cement to 11% and 12 to 14%.

Lakeside slopes of the north-shore levee vary from 1 on 5 to 1 on 7 and presented no problem. But the east-shore slope is 1 on 4.6, and the greater angle caused numerous difficulties in operation of equipment. Mixing and rolling controls were not as close as desired, and experience indicated that standard equipment cannot operate successfully on transverse slopes steeper than 1 on 5.

• **The method**—Ground was scarified to a 6-in. depth and graded. Then cement bags were spotted on the surface so as to give the desired mix. Cement was dumped in lateral windrows and spread over the entire area by a spike tooth harrow, dragged with teeth up.

Dry mixing followed. A gang plow and disk harrow combination was tried first, but both cut deeper on the downhill side due to distribution of weight and moved material downslope. A single pass of spring tooth cultivator followed by a pulverizer was found to give better results.

Water was added as required by field tests. Tank trucks (1,000-gal. capacity) ran along the flatter levee slopes without difficulty but had to stay up on the crown of the steep 1 on 4.6 slope, requiring hand operation of a spray bar connected by hose to the tank.

Wet mixing was done by two or three passes of the same equipment successful on the dry mix. The tendency of materials to shift downslope was countered by constant blading with a grader.

At optimum moisture content, sheepsfoot rollers began operations; they compacted the material to within 2 in. of its surface. This top 2 in. was then scarified and given a final grading. A 9-wheel pneumatic roller completed compaction. (Smooth tandem rollers slid downslope).

Where stone revetment protects the toe of the levee slopes, bond between stabilized slope and revetment was attained by digging a small trench along the edge of the revetment, washing the rock clean and back-filling with hand-tampered soil-cement with 3% more cement than that used on slopes.

Specifications called for curing under a layer of earth, straw, burlap, or curing paper. The contractor requested and was granted permission to use RC-3 asphalt for curing. He wet the surfaces first, then treated the north shore slope with 0.22 gal per sq yd and the east shore slope with 0.26 gal per sq yd.

• **The results**—Actual densities were checked one day after compaction, and the contractor was required to keep within 10 lb of the theoretical maximum. He found this easy on the north shore, but had difficulty achieving specified compaction on the east shore. This is believed to have been partly due to a tendency of marl to swell when wet and disturbed, partly to the complexities of compacting on the steeper slope.

In one 200-ft length of north-shore slope, the mix was unstable even after two weeks of curing. The contractor elected to remove the unsatisfactory material and replace it with plastic cement (a richer soil-cement mixed in mixer rather than in place).

It later was found that aggregate in this section was practically devoid of shell and much drier than had been supposed. Samples taken in mix design were not truly representative.

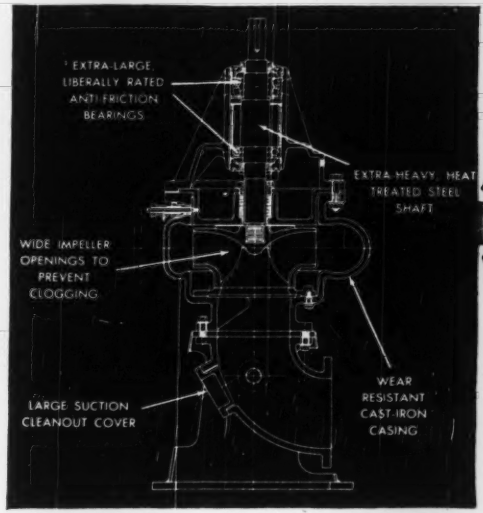
The whole job was done in three weeks. The record daily rate for mixing and rolling was 7,130 sq yd.

It is now over six months since completion, and all pavement appears in good condition. Very fine transverse cracks have appeared at 40- to 50-ft intervals. The only joint, or longitudinal, crack is at the angle between slope and crown.

Work was under supervision of Col. R. W. Pearson, Jacksonville district engineer. For the contractor, J. A. Walker was general superintendent, and D. W. Smoak was in direct charge. V. O. Peterson of the Portland Cement Association, Chicago, gave technical advice.

A BRUTE for Punishment!

ALLIS-CHALMERS Sewage Pump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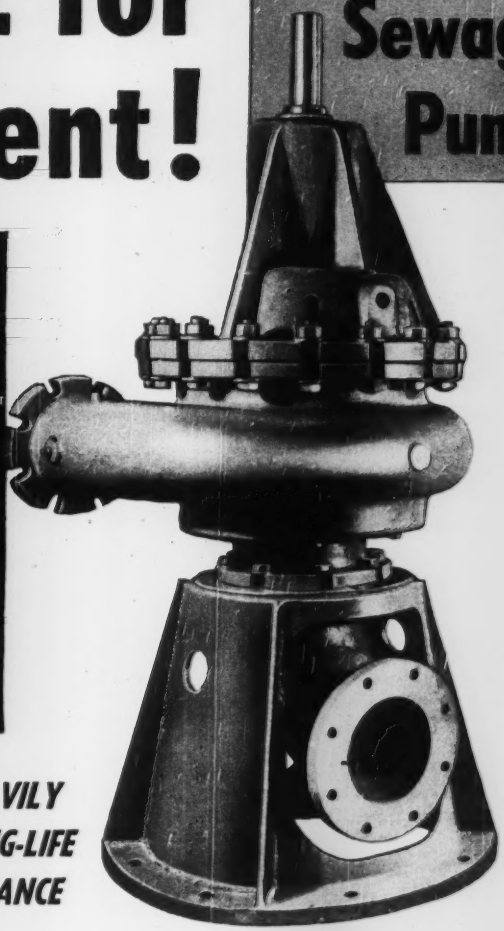

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FROM SHAFT TO BASE, extra-heavy construction in this new sewage pump adds up to long wear and low maintenance.

The shaft is heavier than in conventional sewage pumps—and made of open-hearth, heat-treated steel selected for high shock strength to resist breakage. Anti-friction bearings are extra-large and liberally rated. Impeller inlets are rounded-off, generously large to prevent clogging.

A radially-split casing makes it easy to remove the complete rotating element by simply removing the universal coupling and loosening a few bolts. You do it all in a few minutes and don't have to disturb the intake or discharge piping.

Standard sizes to 10,000 gpm — can be built larger. See your nearest A-C Sales Office or write for Bulletin 08B7504 for more complete details on this new pump. A-3113

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CENTRIFUGAL PUMPS

NATIONAL Pipe gets first call for the United Nation's "Secretariat" Building

IN this 39-story skyscraper, the first structure in the permanent home of the United Nations, more than 400 tons of steel pipe were supplied by NATIONAL Tube Company. 178 tons went into the heating and air-conditioning systems, 208 tons were used in the plumbing lines, 23 tons serve as stair hand railings.

NATIONAL Pipe, produced by the world's largest maker of tubular products and used almost exclusively in this important building, is the same NATIONAL Pipe that has been giving uniformly good service for more than sixty years in all types of buildings throughout America. Constantly improved, thoroughly dependable, NATIONAL Pipe offers the most service per dollar of cost.

NATIONAL Pipe offers the user more for his money because there's more put into it. Its manufacture combines the finest steel making practice and the most advanced pipe making techniques. As a result, NATIONAL Steel Pipe is unsurpassed for its uniformity in all respects. Strong, clean, easy to thread and to weld, it installs readily, and performs so dependably that the passing years serve merely to demonstrate its superiority.

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READER COMMENT

Welding May Be Unsafe

Sir: It is a fact that use of welding in steel structures provides the engineer, fabricator and steel erector with a useful method of assembly. In some cases, it is the most economical and best way of doing the work. There are good reasons, however, why the structural engineer approaches its use with caution and even with reluctance.

The difficulty does not rest entirely with the designer, as was implied by a previous commentator. Just as structural designers have been trained and educated to develop effective and safe riveted details, so they are being trained to design efficient and effective welded details. The trouble in this writer's opinion is that the solution of the welding problem does not end with the designer.

A satisfactory method of weld inspection is yet to be found. The stethoscope and X-ray may be all right in the laboratory, but they are not for use by the average inspector in the field. A feeling of uncertainty tends to remain with the engineer responsible for the safety of the structure. Until a simple and satisfactory means is found for inspecting welds, the feeling of uncertainty will remain and will serve as a drag on the more extensive use of welding.

Unlike a riveted job, welded structures can be assembled from the raw material as delivered to the contractor by the steel supplier, with little or no shop fabrication. An oxy-acetylene flame cutter, a welding outfit, and some welding rods make up about all the equipment necessary.

Some contractors will take on a job based on riveted design and then after obtaining the contract will ask permission to substitute welding. Generally no objection can be taken to such a request, since welding is recognized as a means of assembly by many city building codes. The request may be made by a contractor who expects to save money, because he has some welding equipment and a foreman who is supposed to know all about welding. Detail drawings submitted for approval will be in good order and with all field connections properly detailed. Yet, when the work is being assembled in the field, it often turns out that the contractor's field force has but the sketchiest knowledge of welding and no knowledge at all as to the why or wherefore of structural functioning.

If the structure is not big enough to warrant full-time employment of a structural inspector by the owner—and many small and medium-sized jobs do not warrant—unhappy results follow. In short, it is not always a case of the designer not wanting to apply new methods. Some of the practitioners of the new method may use it to cut costs and in so doing cut into the safety of the structure.

ELI M. VINER
Structural Engineer
Providence, R. I.

Minimum Fee Schedules

Sir: Perhaps your inability (in a May 25 ENR editorial) to "get excited" over the announcement that the Department of Justice will start action against organizations of architects and engineers that set minimum fees for professional work is the result of wishful thinking together with a not entirely objective analysis of the U. S. Supreme Court's Washington Real Estate Board decision. Let us examine the facts.

Your editorial stated that:

The Justice Department's—"victory had little significance, as the court itself admitted when it observed that the real estate boards apparently had made no effort to compel members to adhere to the minimums (1). Criminal action could only be brought on a showing of such compulsion (2)."

". . . There is nothing illegal in using a minimum fee schedule as a guide, but some of the state societies of professional engineers have declared that charging fees below those set by the society will result in disciplinary action (3). . . ."

The facts as to each of the above indicated statements are:

(1) The Court made no such admission. To the contrary, the majority speaking through Justice Douglas said: ". . . Price-fixing is per se an unreasonable restraint of trade. It is not for the courts to determine whether in particular settings price-fixing serves an honorable or worthy end. An agreement, shown either by adherence to a price schedule or by proof of consensual action fixing the uniform or minimum price, is itself illegal under the Sherman Act, no matter what end it was designed to serve. That is the teaching of an unbroken line of decisions. . . . And THE FACT THAT NO PENALTIES ARE IMPOSED FOR DEVIATIONS FROM THE PRICE SCHEDULES IS NOT MATERIAL. . . . SUBTLE INFLUENCES MAY BE JUST AS EFFECTIVE AS THE THREAT OR USE OF FORMAL SANCTIONS TO HOLD PEOPLE IN LINE." (Emphasis supplied.)

(2) Criminal action not only could be brought in the absence of such compulsion, but was brought by the government in the Realty Board case. The Supreme Court's review was limited to the civil decision only because the adverse decision of the lower court in the criminal action was not appealed. Had the latter been appealable, it is reasonable to assume that the result would have been the same, since the facts in both cases were identical.

(3) The Real Estate Board argued, as your editorial did, that its minimum fee schedule was merely a guide and was therefore legal. You will note in the above quotation that the Court took a dim view of that contention.

In the light of the Washington Real Estate Board decision, it would appear wise for state and national societies of architects and engineers to give serious consideration to abandoning their minimum fee schedules entirely.

L. M. G. WOLMAN
Engineer, Pennsylvania
Department of Forests & Waters
Harrisburg, Pa.

EDITOR'S NOTE: Our statement listed by Mr. Wolman as item (1) was based on an incomplete abstract of the decision and is not borne out by a reading of the full decision. That fact, however, does not affect the main conclusion of the editorial in question, namely, that the Department of Justice will have little chance of building up a strong case against organizations of architects or engineers that have issued schedules of minimum fees, except possibly in the case of some of the state societies that have included in their schedules a statement that disciplinary action will be brought against members who charge lower fees.

Concerning item (2), it is true that criminal action was brought, as Mr. Wolman states, but the District Court found both the Washington Real Estate Board and the National Association of Real Estate Boards not guilty. We can find nothing in the Supreme Court's decision to support Mr. Wolman's conclusion that it would have found either organization guilty of criminal action. Courts frequently make different findings in civil and criminal suits.

As to item (3), the Supreme Court said: "The statement in the code of ethics that the schedule of fees 'should be observed' is somewhat ambiguous. It may be advisory only." To us, that appears to indicate that if the evidence showed the use of the schedule of fees to be advisory only the court would not have considered its use illegal.

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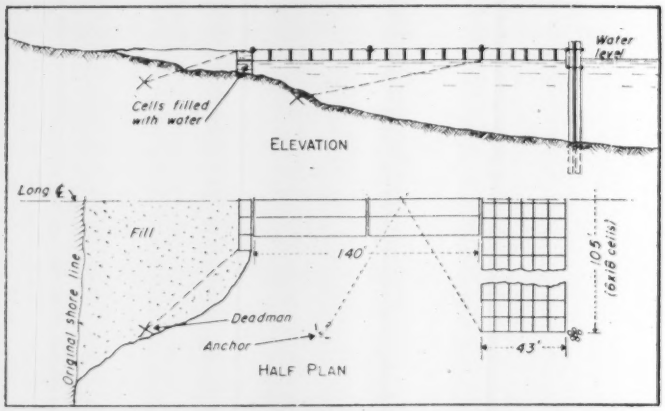


LATEST PONTOON-WHARF DESIGN—Extensive experience in building pontoon-cell wharves has developed certain designs in which these units are best adapted to wharf service. The cell arrangement shown above provides for reasonable grade in the approach even at extreme tide variations, affords sufficient dock space for unloading a large ship, and can be built quickly with a minimum of gear and materials. The units used are the Navy's steel pontoon cells 5 x 7 ft in plan and 5 ft deep.

Sectional Precast Manhole Built Cheaper and Quicker

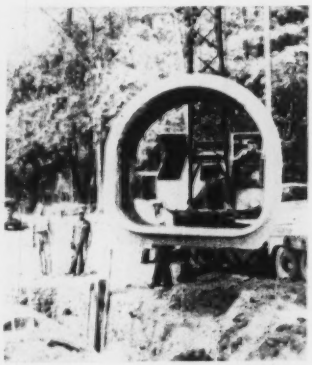
Rochester Gas and Electric Corp. uses reinforced concrete pipe for manholes—for two reasons: they are cheaper than masonry to build and they take less time to install, an important factor on busy streets.

Cost savings, compared to masonry construction, are estimated at 30%.

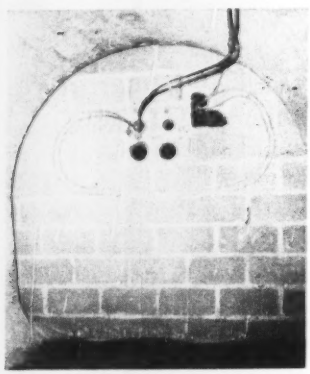
Pipe used is a standard cattle-pass section which comes in 4-ft lengths and has an 80-in. ID. It has a flat floor with rounded curb to vertical walls that extend to half the height; the top half is circular.

Three lengths of this pipe make a manhole 12 ft long x 6 ft 8 in. high and wide. Ends are closed with masonry (with provision for duct entry), and an opening is cast in the top of one length of the pipe for manhole form and cover.

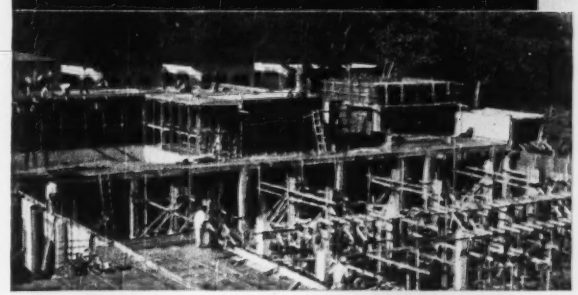
A crane can place three sections on the graded bottom of a hole in two hours; then, it remains only to place the frame and cover and lay up the ends. If drainage is necessary, excavation can be sloped toward one end so the pipe floor won't have to be cut—G. H. Fiedler, Superintendent Electrical Distribution, Rochester Gas and Electric Corp.



PIPE SECTION is moved from trailer to hole by crane. Note ladder jutting from hole cast in section already placed.



END WALLS of manhole are the only masonry required. All ducts are brought in through these.



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CONTRACTORS: Mendez, Grillasca, Nolla, Galib and Marquez, Inc.

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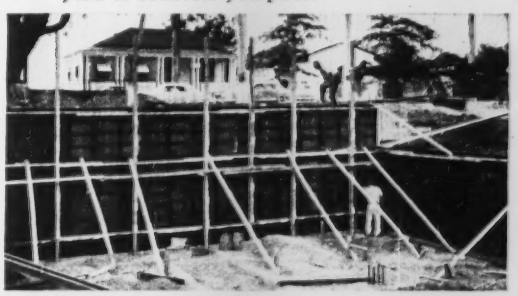
BILL OF MATERIAL FOR FORMING CONCRETE ON TURERCULOSIS HOSPITAL, RIO PIEDRAS, PUERTO RICO

***ESTIMATED:**	
1,000,000 Bd. ft. of lumber required for forms, walers, alignment, etc., @ $ .10 per Bd. ft.	$100,000.00
LESS 20% lumber salvage	20,000.00
TOTAL ESTIMATED COST	$ 80,000.00
†**UNI-FORM COSTS:**	
22,500 sq. ft. of UNI-FORMS	$ 37,256.80
400,000 bd. ft. alignment and bracing lumber actually used	40,000.00
SHIPPING UNI-FORMS TO JOB	3,800.00
	$ 81,056.80
Less Contractor's valuation of UNI-FORMS at end of job. 80%	$ 29,805.40
LESS 20% LUMBER SALVAGE	8,000.00
TOTAL ACTUAL MATERIAL COST	$ 43,251.40



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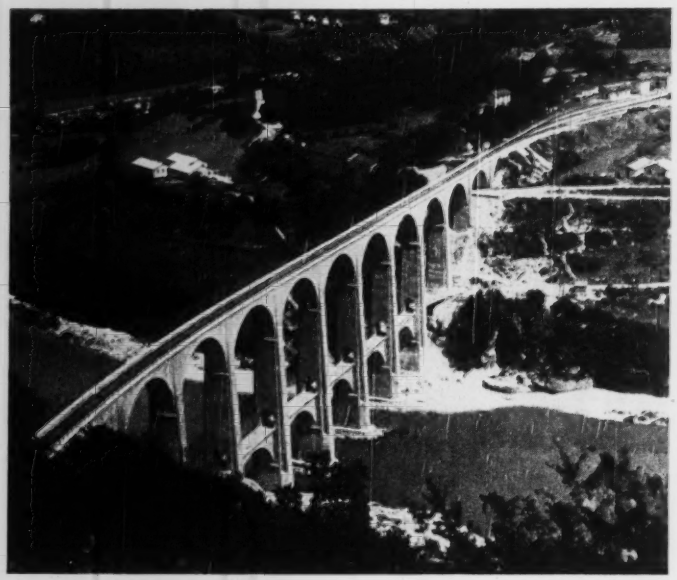

THE BRIDGE THAT 16 MEN BUILT—This is the Viaduct de Cize-Bolozon. It is an exact replica of one completed in 1875, shortly after the Franco-Prussian war. It was largely destroyed in the last war, but has now been entirely rebuilt and is used for highway and railway traffic on a lower and higher level respectively. Because of shortage of money and manpower only 16 men were employed on the job and it took them even with all mechanical aids, five years to clear away the rubble and reconstruct the masonry bridge.

Viaduct of Cize-Bolozon rebuilt by 16 men in 5 years

A team of only 16 men rebuilt a double-decker masonry bridge recently opened for traffic at Cize-Bolozon in eastern France.

The bridge is 895½ ft long and 109 ft. 4 in. high. It spans the Ain River on one of the main railroad lines linking the rich Jura region with Switzerland. A two-lane highway traverses the bridge's lower level; a one-track railroad its upper level. The lower level is supported by six arches 43 ft. 9 in. high. Eleven arches rising 65 ft. 7 in. above the lower level support the railbed.

The bridge is an exact replica of one completed in 1875. French Resistance partisans blew a 664-ft. gap in it with homemade mines in 1944 in an attempt to disorganize the German retreat. Only the abutments and their adjacent arches were left intact.

For reasons of economy, it was decided to rebuild the bridge without any changes, since this made it possible to use the abutments and some of the foundations of the piles. Shortage of money and manpower also explains why a team of only 16 men was employed on the job. More than 7,000 bridges were destroyed in France during the war and manpower and resources available for reconstruction were spread very thin in the immediate postwar years.

The small size of the working force employed made necessary a higher degree of mechanization than is generally found on Continental construction jobs. A transforming station with low-tension lines, an electric pumping station, a variety of compressors, a number of large belt-conveyors servicing all levels of the bridge, and a fleet of barges specially equipped for dredging and pile-driving were used in the work.

The big job of clearing away 495,000 cu.ft. of rubble was began in July, 1945. It took two years to complete. Work on the bridge itself began in June, 1947. It was necessary to rebuild completely the foundations of eight piles—three of them in the river. Nine arches supporting the railbed, and six arches supporting the lower level had to be rebuilt entirely.

The five pile-foundations on the banks of the river were finished in a few months. But it took nearly a year and a half to complete laying the foundations of the three underwater piles. It was necessary to do a lot of dredging and to protect the work with temporary dams. A series of floods further complicated the job. By September, 1949, however, 28,000 cu.ft. of foundations had been laid.

No difficulties were encountered in the construction of the lower-level arches. Building the upper arches, which rest on higher, more flexible piles, was a more delicate job and took more time.

The bridge is constructed entirely of quarried stone. A total of 475,000 cu.ft. of materials was used in its construction—28,300 cu.ft. in the foundations and the rest in the superstructure.

Approximate cost of the bridge was 125 million francs, or roughly $350,000. This cost was shared by the French Ministry of Public Works and the French National Railroad.

The bridge was opened to normal traffic last May.

British company to make heavy duty tractors

Directly prompted by the dollar-shortage is Vickers-Armstrong's venture into the manufacture of heavy-duty track-type tractors, just announced in London.

Until now United States firms like Caterpillar, International-Harvester, Allis-Chalmers and others have been the world's only source of supply for tractors over 100 hp. of a size and weight suitable for heavy construction earthmoving, industrial purposes, and agricultural work on a large scale. Last year Britain imported 1,088 track-type tractors.

Vickers-Armstrong, Ltd.—one of the units of the Vickers Lt. steel and shipbuilding combine—for three years has been developing such a crawler-type tractor which it plans to introduce into world markets by January, 1952. The Vickers tractor will be powered by a Rolls-Royce six-cylinder diesel engine of about 180 hp, and will weigh between 14 and 15 tons.

Jack Olding, Ltd., which was Caterpillar dealers for the British Isles, excepting the north of England, has resigned the agency which he held since 1935 and will handle worldwide sales of the Vickers unit.

Production of the Vickers tractor and a full-range of accessories, scrapers, bulldozers, etc., to go with it will be carried on at Vickers-Armstrong's Elswick and Scotswood works at Newcastle-upon-Tyne.

Barber-Greene Photo-News

74M-7-50-AM
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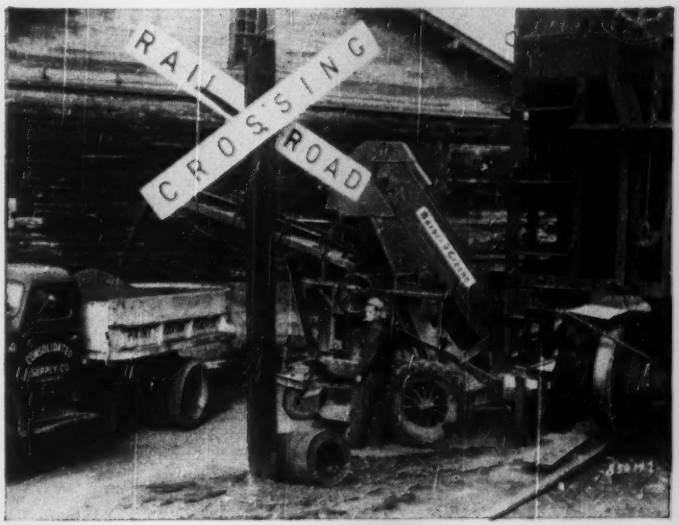
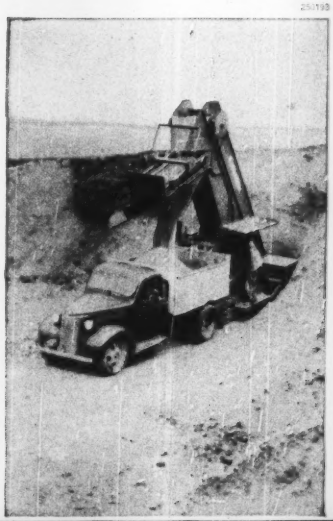
ON-THE-JOB VIEWS AND COST-SAVING IDEAS VOLUME 1—NUMBER 3

STOP . . . LOOK . . . LEARN

Transfer of material from hopper car to truck is a quick and easy operation at the yard of Consolidated Supply Company in Clarksburg, W. Va. The natural elevation of the railroad spur offers the unique opportunity to spill hopper contents directly onto the spirals of its Barber-Greene Swivel Conveyor Bucket Loader. Each driver loads his own truck at a 1½ ton-per-minute rate, trims every load evenly with the simply operated swivel conveyor. This pneumatic-tired Portable "Loading Hopper" moves quickly from job to job to perform all of Consolidated's loading operations throughout the yard.





BIG OPERATOR . . . SMALL INVESTMENT

With a small investment in equipment, Albert Mullen of Kentland, Indiana, is able to meet surge demands of the paving season efficiently and economically with a constant flow of sized material. His Barber-Greene Crawler-Mounted Bucket Loader, equipped with single-deck vibrating screen, makes reclaiming, screening and loading a simple, simultaneous operation. The B-G "Constant Flow" principle saves up to 60% of all truck loading time compared with intermittent swing loading. And the investment . . . much smaller.

Thousands of operators — large and small — have found B-G Bucket Loaders the soundest investment for truck loading, screening and simple excavation. Many have found that they pay for themselves in truck-time and man-hours saved . . . profit-producers even on the smallest jobs.

Barber-Greene *Photo-News*

AIRPORT ON THE SEABOARD

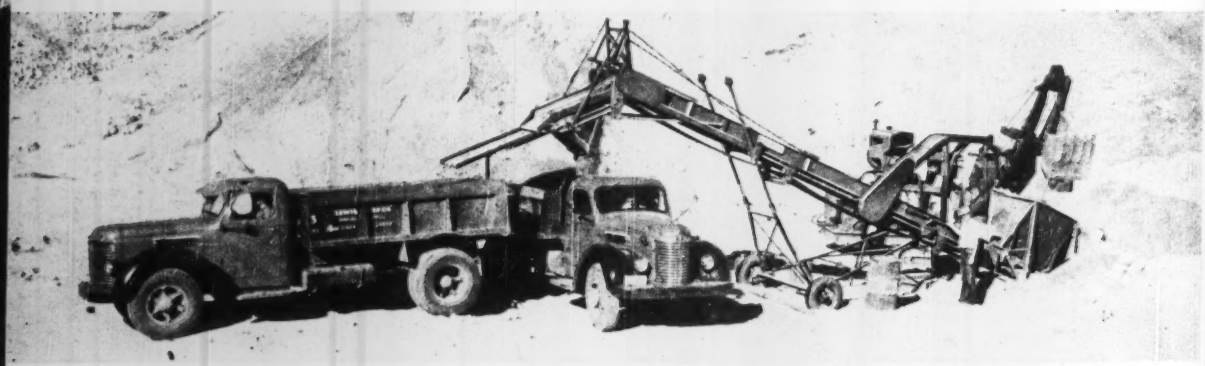
The small coastal resort town of Brunswick, Ga., recently completed laying a 4200' aerial welcome mat for the flying sportsmen of the south. Designed to stimulate private flying—and merchants' business—in the area, Brunswick Air Park has 75' wide runways 1900' and 2300' long, serviced by 50' taxiways. Working on a small budget, they selected a 342-acre field with proper drainage that provided soil type suitable for a mix design of sand-asphalt. After runway and taxi areas were lightly graded and compacted, the top 6" of material was windrowed, then mixed with RC3 by the B-G Travel Plant. Once again it has been proved that the most economical way to build a modern landing field is by using in-place material mixed in the B-G Travel Plant.

Brunswick Air Park, the pride of this small coastal resort town. Smooth, 75' runways are aerial invitation to flying sportsmen and they can be produced at minimum cost, using local material, with a B-G Travel Plant.

Earthbound B-G machine that made it possible to welcome the flying south to Brunswick, Ga. This B-G Heavy-Duty Travel Plant mixed local, in-place material with RC3 to lay 4200 feet of runways.

ONE MACHINE MAKES SMALL GRAVEL PLANT

Lewis Bros., of Hawley, Minnesota, has an efficient set-up for loading out screened aggregate directly from a gravel bank. A sturdy B-G Portable Conveyor is hopper-fed by a small shovel that works the face of the bank. Single-deck vibrating screen separates aggregate from over-size for loading two trucks simultaneously. Teams of trucks are constantly on the move, keeping up with the 3-ton-per-minute loading rate of this green machine that won't jam up, and will start with a full load on the belt.



for full, fast information on any equipment

Barber-Greene Photo-News

QUICK WAY TO LARGE SAVINGS

High speed, efficient operations at this concrete plant—at minimum cost—are maintained by a profit-making Barber-Greene Permanent Conveyor. A fine example of efficient layout, the plant is ideally set up to minimize machine and man-hours, yet produce wet and dry concrete at the rate of 500 cubic yards a day. Here is an application—one among thousands—where standardized, factory-assembled B-G Permanent Conveyors are performing with notable success an otherwise expensive operation.

SMOOTHER STREETS . . .

Using as a base rough brick and concrete streets that are 40 years old, Manhattan, Kansas, is providing its citizens with new, smooth streets even though limited by a rigid law governing bonded indebtedness. The logical solution to resurfacing was found in a Barber-Greene Tamping-Leveling Finisher. The two-inch hot-mix asphalt—which meets all State and Federal highway requirements—makes a smooth, ridge-free surface regardless of variations in the sub-grade. Thanks to B-G Finisher economy, the city engineer plans to transform the old streets at the rate of 30 or more blocks a year.

SMOOTHER FLOW . . .

When the Adamston Flat Glass Company replaced a power shovel with a B-G Portable Conveyor, it found its stock pile of "Cullet" building much smoother . . . bigger at less cost. "Cullet"—pulverized waste glass, which is stored for re-use—resembles rough mush snow and tends to pack like wet sand. It is extremely abrasive, containing large pieces of sharp, thick glass, much more destructive to equipment than sand. The B-G Portable Belt Conveyor has done away with all the cumbersome, expensive handling of the past and at the same time has introduced new economy in handling this tough material.

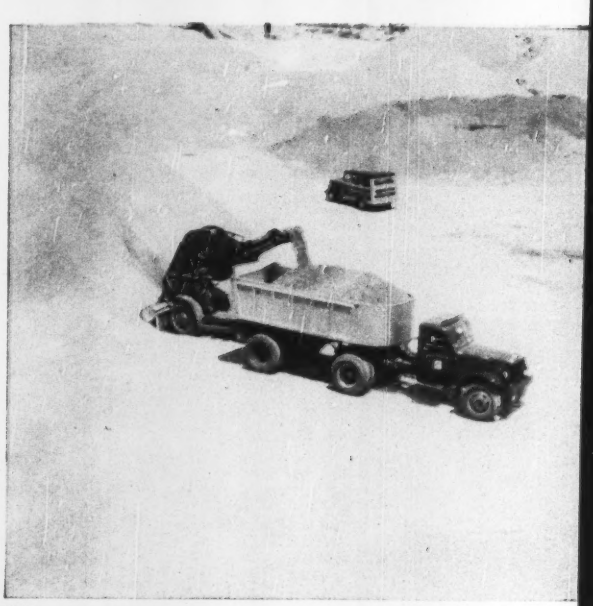
on these pages--see your B-G Distributor

Barber-Greene *Photo-News*

AHEAD BY A LENGTH . . . WITHOUT "JOCKEYING"

This B-G Bucket Loader is a long length ahead when it comes to loading long, high, 25-ton semi's with 2" crushed stone. The long, hydraulically controlled boom permits easy load trimming regardless of truck size. The West Roxbury Trap Rock Co. is well pleased with this B-G Loader that disregards truck height and length . . . does away with "jockeying" of tricky semi-trailers—and makes tremendous savings in man-hours and equipment time.

Well balanced and controlled by an automotive type steering mechanism, this pneumatic-tired B-G Bucket Loader travels from stock pile to stock pile or from job to job at 15 miles per hour. Low overall height permits highway travel without interfering with overhead wires, underpasses, trees, etc.



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HOW TO CLEAN UP AT THE TRACK

Barber-Greene is cleaning up at the Hollywood Turf Club in a way that has nothing to do with pari-mutuel prices. In the interest of safety, the track acquired a Crawler-Mounted B-G Bucket Loader that provides an effective means of cleaning the track—removing pebbles, bolts, nuts, nails, etc., that might be picked up by flying hoofs and thrown into the eyes of following horses or jockeys. Canvas-encased to cut down dust, this B-G Loader picks up the windrowed material and loads it on the separately mounted vibrating screen. Screened material is returned to the track, foreign objects are diverted into a cart towed alongside.

SERVICE . . . RIGHT COMBINATION OF EXPERIENCE, TRAINING, ENGINEERING

Your Barber-Greene Distributor offers you the most important service available today — that of saving time and money on every job that involves the handling of all materials . . . mixing and placing bituminous surfacing materials . . . as well as ditching and snow removal. Intensive factory training and field experience have made these men specialists. They know how to apply Barber-Greene equipment to assure the most in performance—they know how to show you the best in maintenance practice. And behind their every recommendation stand Barber-Greene's own 34 years of experience in engineering and manufacture. Plan now to call your B-G Distributor. Ask him to help you get the most in cost-cutting operation by eliminating expensive equipment and manpower. For complete information—bulletins, specifications and prices on any or all Barber-Greene equipment—get in touch with your B-G Distributor, or call, write or wire directly to the address below.

Barber-Greene Company

AURORA, ILLINOIS, U. S. A.

MUNICIPAL AFFAIRS

BUSY PRAIRIE METROPOLIS—Wichita is only 137 miles southeast of the geographical center of the United States. Its assessed valuation is $219,502,670, and last year 6,591 building permits were issued at a valuation of $22,408,878.

There is no housing shortage in Wichita, Kan.

Wichita claims to be the best-housed city in the country. Local builders have kept pace with the growth of the city's population: They expect to construct 2,500 units this year, of which 1,000 will be for rental.

Wichita, the great livestock market and meat packing center of southern Kansas, is in the midst of an $18,000,000 public works program. The city's area has increased from 20 sq. mi. to 27.3 sq. mi. in 10 years. Soon to be built is the $2,250,000 West Wichita high school. A $190,000 sewage disposal plant enlargement has just been completed. About $3,750,000 is being spent on streets, sewers and sidewalks, mostly to provide service to new subdivisions. The enlargement of the water service has cost the city $1,300,000.

Sedgwick County is paying about $100,000 this year for rectifying the channel of the Little Arkansas River —about a third of the cost. Wichita is headquarters for oil production in Kansas and parts of adjoining states. Seven pipe lines supply the city with natural gas.

The richest soil in America lies in a broad belt of which Wichita is the center. That is one reason why Wichita's retail sales amount to $212,000,000 a year.

Municipal Briefs

Mile-long tunnel—Just being completed after a year's work is the Kingsbury Run storm relief sewer at Cleveland, Ohio. About 3,800,000 bricks were used in its construction. It is 65 ft below street level and varies in diameter from 9 to 11 ft. Costing nearly $1,000,000 it is expected to end floods in the area to the south of Kinsman Ring SE.

Sewerage authority—The board of freeholders of Middlesex County, N. J., is about to appoint a Raritan Valley Trunk Sewerage Authority empowered to study the possibility of constructing a $23,000,000 trunk sewer.

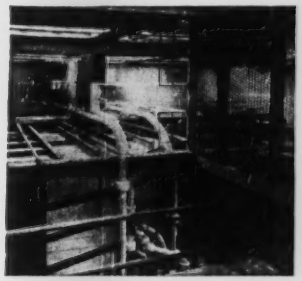
Students help city—The modern problems class of the Marion, Ind., high school has completed a survey of the city in cooperation with the local plan commission which says that the work done and the facts and statistics obtained by the students would have taken the commission itself a year to get. About 120 students took a part in the survey which was completed in about four weeks.

Water for Mobile—A bond issue of $7,000,000 to finance construction of an extensive new water-producing system for Mobile, Ala., has been sold. New facilities planned will increase Mobile County's water potential from

KLEMP
OPEN STEEL
FLOORING

"Speaks for itself"

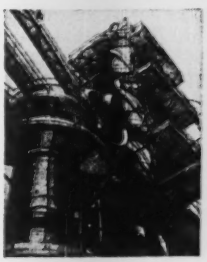
Wherever specifications call for structural flooring, KLEMP Gratings speak the language of strength—efficiency—rigidity. A quick, easy, economical pre-fabricated installation inside or out.



Klemp Gratings admit light above and below. Allow free passage to sprinkler systems and reduce them to a minimum.

- Lightweight—Super-strong
- Entirely fire proof
- Non-slipping
- Self-cleaning

KLEMP Gratings are cut to your special requirements, complete, ready to install. Riveted for greatest strength. Protection for men and traffic.



When used outside as at left, they reduce collection of snow and ice, shed moisture, are self-draining.

Write at once for the 1950 KLEMP Open Steel Grating manual—illustrations on all installations—important information on cost-saving. Ask about KLEMP Steel Safety Mats and Floorsteel Flexible Floor Armor that rolls out like a rug. Also Hexteel for Gannister Linings.

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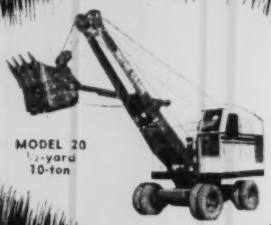
NEW!
HEAVY DUTY
WAYNE CRANE



MODEL 20
½-yard
10-ton

GIVES YOU
SMALL machine economy
and
BIG machine yardage

The pioneer manufacturer of rubber-mounted, self-propelled excavators is first again to give you greater lifting capacity and digging ability with minimum effort in a new ½-yard machine.

- Swing speed—6½ r.p.m.
- Travels, lifts, booms and swings either simultaneously or independently
- Oversize drums and clutches
- 360° operation at full capacity with equal stability
- One-man operation
- Travels forward or reverse to 15 m.p.h.

Compare the new Model 20 before buying any ½, ⅝ or ¾-yard shovel-crane. See your Wayne Crane Distributor NOW!

Manufactured by Wayne Crane Division of American Steel Dredge Co. Inc., Fort Wayne 1, Indiana

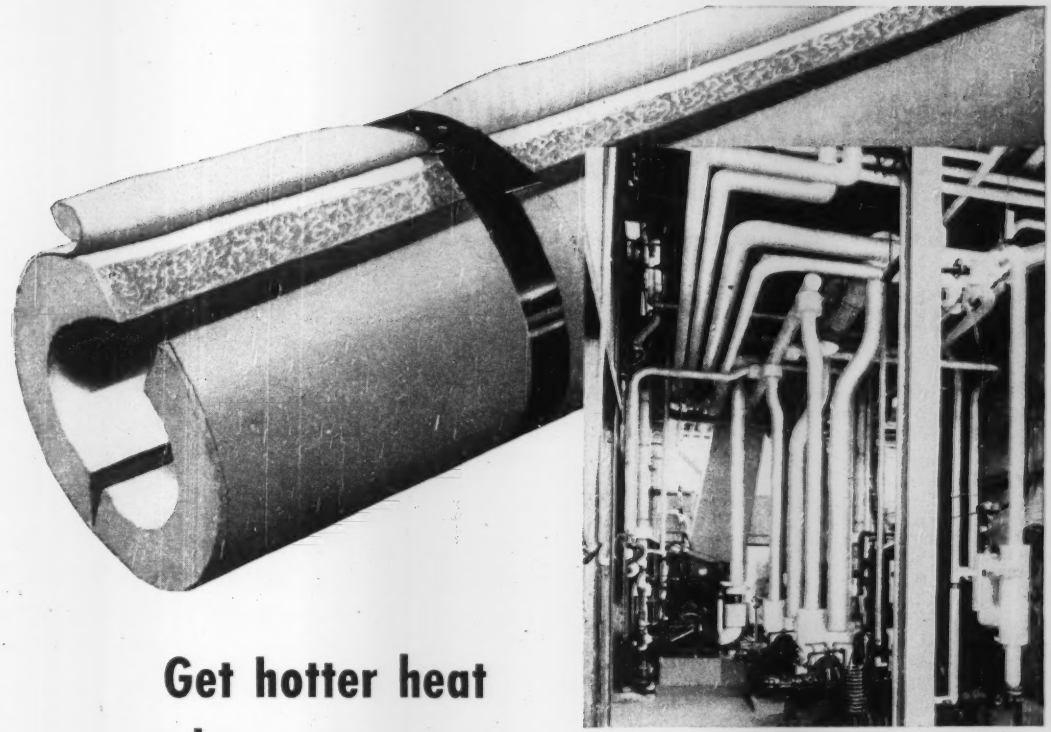
You are invited to visit or call a Wayne Crane Distributor for help on any equipment problem. Complete service and parts facilities are maintained by Wayne Crane Distributors in all principal cities.

20 mgd to 100 mgd. Contracts totaling $2,398,839 for construction and laying of a 16-mile pipe line from Big Creek to the industrial area near Plateau have already been awarded. A dam to create a reservoir of seven square miles will be built at a cost of about $1,500,000.

Miami airport—Expansion of the Miami International Airport was assured when the Dade County Commission recently made payment of $2,240,000 to the Seaboard Airline Railroad to move its switching yard and shops from the center of the airport.

TIMES SQUARE TORN UP—View looking north on Seventh Avenue from 42nd Street, New York City, showing work accomplished by 4 p.m. on first day of street repairs in the area, and the tie-up of traffic due to project of removing trolley tracks on half of the Avenue. Single-lane passing was permitted while work was in progress.—Wide World photo.

CHICAGO SUPERHIGHWAY—Work is being speeded on the Wacker Drive link in the superhighway system of Chicago to complete the upper level of the North section so it can be opened for traffic this month. This will allow traffic to move from Washington Street to Lake Street (seen in background). This view is North toward the Lake Street terminus of the Wacker Drive Highway. Northbound traffic will move into superhighways leading north and northwest at the section of Wacker Drive shown here. The single-car ramp at the right will permit street level traffic to move to the speedier lower level at each block. The $1,500,000 project of the 2-level roadway is on the western fringe of the Loop. Contractor is Herlily Mid-continent Co., Chicago. —Wide World photo.



Steam piping, covered with K&M "Featherweight" 85% Magnesia, in Standard and 1½" thicknesses; canvas covered.

Get hotter heat at less cost with K&M "FEATHERWEIGHT"® insulation

Keep heating costs down—and heating efficiency up—with K&M "Featherweight" 85% Magnesia Insulation. 85% Magnesia is the most widely accepted insulating material in its field. And in K&M "Featherweight," basic carbonate of magnesia is combined with selected and specially processed asbestos fibers to produce a highly efficient insulation of extremely low thermal conductivity.

K&M "Featherweight" withstands temperatures up to 600° F. without loss of insulating value. And, though it's amazingly light in weight, it is strong and durable also. It can withstand vibration, a reasonable amount of compression, and its insulating properties are not affected by alternate wetting and drying. As it is entirely mineral by nature, it cannot burn.

"Featherweight" 85% Magnesia insulation is easy—and economical—to apply. It can be stored and handled without any special precautions. No special tools are needed to apply it: "Featherweight" is easily sawed and cut; can be fitted snugly to contours without breaking apart.

K&M "Featherweight" 85% Magnesia is furnished for all standard pipe sizes in sections and in sets of segments 3 feet long in the following thicknesses: Standard, 1¼", 2", double standard (broken joint) and 3" (broken joint). Blocks and lagging are also available for irregular surfaces. Ask your K&M Distributor for complete information, or write us direct.

K&M best in asbestos®

Nature made Asbestos . . . Keasbey & Mattison has made it serve mankind since 1873

KEASBEY & MATTISON
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When it comes to building—HE KNOWS!

. . . so do U. S. G. roof deck contractors who build

SHEETROCK-PYROFILL

T. M. Reg. U. S. Pat. Off.

poured-in-place gypsum roof decks

Only a beaver can build a beaver dam to the "required specifications." That's his specialty.

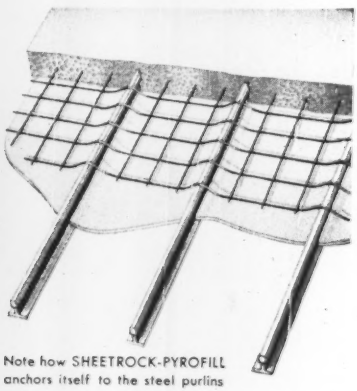
And, when your specifications call for SHEETROCK-PYROFILL, call for your U.S.G. roof deck contractor—for only he can install SHEETROCK-PYROFILL roof decks. That's *his* specialty.

He also erects roof decks of USG Precast Metal Edge Gypsum Plank and Short Span Gypsum Tile.

SHEETROCK-PYROFILL roof decks meet the most exacting requirements because they're incombustible, lightweight, strong, and easy to maintain.

Just as important, SHEETROCK-PYROFILL is quickly installed—up to 20,000 feet poured a day—and sets in less than 30 minutes. It will surely meet, and in many instances help you beat, your construction schedule.

For the name of your U.S.G. roof deck contractor, write Industrial Sales Division, United States Gypsum Company, Chicago 6, Illinois.



Note how SHEETROCK-PYROFILL anchors itself to the steel purlins

United States Gypsum

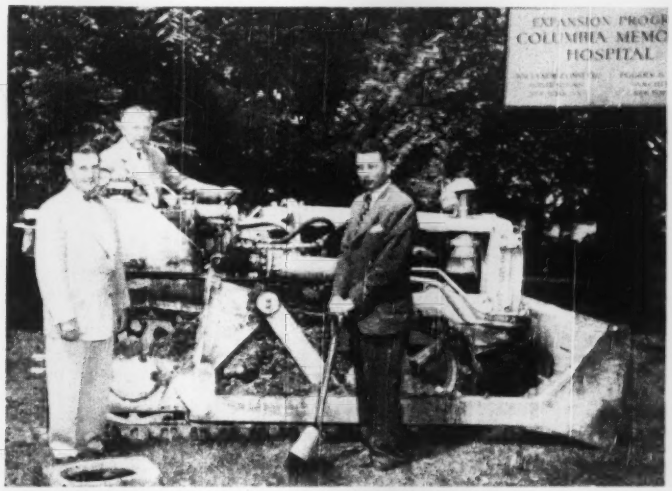
For Building • For Industry

Gypsum • Lime • Steel • Insulation • Roofing • Paint

MEN AND JOBS

B. C. Horne and **E. C. Long** are job superintendent and building engineer, respectively, for the J. A. Jones Construction Company of Charlotte, N. C., on the construction of a $4,000,000 hospital (400-bed) and medical school building at the University of North Carolina, Chapel Hill, N. C.

Boyd Wierman, Mansfield, Ohio, city engineer for Shelby, Ohio, has resigned, after holding the post on a part-time basis more than 15 years. The Judson Engineering Co., Canadusky, O., owned by W. W. Henklemann, has been employed to do the Shelby engineering work.



At the recent ground breaking ceremonies for the $2,000,000 expansion program of the Columbia Memorial Hospital, Hudson, N. Y., are, left to right, George F. Dennis-ton of Eggers & Higgins, Architects; Herman F. Zorn, president of the board of Trustees of the Hospital; and William L. Crow, president of the W. L. Crow Construction Co., builders.

Highway engineers of three nations recently visited the West Virginia State Road Commission in their study of road building in this country. Pictured above at the commission's planning division office are, left to right, George Zografidis, division engineer, Koromila 23, Thessaloniki, Greece; C. A. Rothrock, State planning engineer, The State Road Commission of West Virginia, Charleston; J. F. Kent, highway economist, U. S. Bureau of Public Roads, Charleston; Durru Suder, construction engineer, Directorate of Highways, Ankara, Turkey; and Michael Golan, assistant district engineer, Public Works Department, 30 Arlosoroff Street, Haifa, Israel.

R. B. Shaw, Lincoln County road engineer at Davenport, Wash., and a member of the department since 1919, has retired, to be succeeded by **Clarence E. Harvey**, his deputy for many years. Shaw has been either a deputy or county engineer ever since he joined the department, with the exception of two years when he was a deputy engineer in nearby Stevens County. Harvey has been with the department for 25 years.

Earl M. Nisen, chief engineering assistant and consultant to the Chief of Army Engineers for the Milwaukee, Wis., district, retired June 30. He had served the Milwaukee district since April 4, 1908.

Robt. M. Angas, civil engineer, has been elected a trustee of Jacksonville, Fla., Junior College.

A. K. Wetzig, who formerly represented Texas-Irvington Form and Tank Corp. in the Southwest, has opened a consulting engineer's office in Houston, Tex.

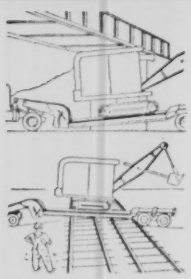
Bert W. Whitehurst has rejoined the Stone & Webster Engineering Corp., Boston, Mass., as industrial engineer. Recently he has been project engineer for the Anderson-Nichols Co., Boston. He was with Stone & Webster for eight years and was active in industrial and utility work as well as the Manhattan Project at Oak Ridge, Tenn. Earlier he was head of the Whitehurst Research Corp., New York City, and for a time was with Ebasco Services, Inc., New York, in public utility power plant design and engineering.

Ralph L. Wolf, a former executive secretary in the Ohio Highway Department, has been appointed traffic engineer for Columbus, Ohio, succeeding Harry H. Turner, Jr. Wolf was formerly an engineer in the Franklin County Department of Building Regulation. Turner resigned to become engineer in charge of traffic and transportation for the Regional Planning Commission.

W. J. Johnston, district engineer of the Federal Department of Public Works, Edmonton, Alta., has been named superintendent engineer for all Western Canada.

J. Paul DuPre, resident engineer for the North Carolina State Highway & Public Works Commission, at Lenoir, N. C., has resigned to go into the contracting business. J. E. Doughton, resident at North Wilkesboro, will succeed him.

The ROGERS 4-FEATURE POWER-LIFT DEMOUNTABLE GOOSENECK



Patents Pending

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It embodies the kind of versatility that makes every haul *easier, faster, more profitable.*

Loading, at a *lower* angle, is *faster. Larger* tires carry *heavier* loads legally. Unloading, reloading, detouring are *avoided* through quick adjustment of the deck height to *different conditions* encountered.

It's equally as rugged as the standard Rogers Gooseneck regardless of its detachable feature. And it's available on most Rogers Trailers and adaptable to many trailers of other makes.

Bring your equipment up-to-date and be in a position to handle operations more efficiently and more profitably.

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CLAMSHELL BUCKETS
INSURE A BIGGER DAYS WORK
• Special Shell curvatures for easy discharge. Bearings sealed from grit and abrasive action assure long bucket life with a minimum of wear.
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Branches: New York; Philadelphia; Chicago; Berkeley, Calif.
A MOUTHFUL AT EVERY BITE

ELECTIONS AND ACTIVITIES

Franklin County chapter of the Ohio Society of Professional Engineers has elected Cecil K. Rose, Columbus, president; Floyd C. Rodick, Columbus, vice-president; Leslie D. Harrison, Columbus, secretary; and C. E. Bischoff, Westerville, treasurer.

Lorain County chapter of Ohio Society of Professional Engineers has elected D. E. Starkey, Norwalk, president; L. W. Banister, Elyria, vice-president; and Virgil L. Hume, Lorain, secretary-treasurer.

Alton Skinner, Jr., has been installed as president of the Durham, N. C., Engineers Club. Marion Ham, vice-president and Guy Bennett secretary-treasurer.

Professional Engineers of North Carolina has adopted a resolution offering "its roster of scientific men in North Carolina, its resources of scientific knowledge, technical skills and engineering" to the state in meeting all phases of civilian defenses resulting from the national emergency. Some 75 members of the organization attended a three-day meeting and speakers included Col. Bernard L. Robinson, engineer of the South Atlantic Division of the Corps of Engineers, U. S. Army, who spoke on "The Engineer and National Defense"; Henry T. Gurley of Burlington, N. C., vice-president of the Western District of the state group, who discussed "The Engineer in Public Affairs"; Maj. Gen. Albert E. Brown of Asheville, U. S. Army retired, former chief of the U. S. Section of the joint U. S.-Soviet Commission on Korea, who spoke on the Korean situation; Lindsey M. Gudger, Asheville architect, who discussed engineer-architect co-operation; John R. Gove of Chapel Hill, secretary of the state group, who spoke on "Functional Groups"; and B. S. Colburn, retired Asheville engineer. The organization was formed in January and has more than 200 licensed professional engineers in its membership. It is part of the National Society of Professional Engineers. Officers are: M. Frank Wooten of Charlotte, president; W. F. Evans of Wilmington, vice-president of the Eastern Division; Henry T. Gurley of Burlington, vice-president of the Western Division; John R. Gove of Chapel Hill, secretary and T. C. Brown of Raleigh, treasurer.

CALENDAR

N. Y. section A.W.W.A., fall meeting Saranac Inn, Upper Saranac Lake, N. Y., Sept. 7-8.

South Dakota Reclamation Association, convention, Pickstown, Sept. 10-11.

Conference on "Ground Facilities for Air Transportation," Massachusetts Institute of Technology, Cambridge, Mass., Sept. 12-14.

Canadian Institute on Sewage and Sanitation, annual convention, Bigwin Inn, Ontario, Sept. 11-13.

W. Va. section A.W.W.A., annual meeting, Pritchard Hotel, Huntington, W. Va., Sept. 13-14.

Conventions of Roadmasters' and Maintenance of Way Association, and the **American Railway Bridge and Building Association**, Hotel Stevens, Chicago, Ill., Sept. 18-20.

New England Water Works Association, Poland Springs, Me., Sept. 18-21.

Convention Institute of Traffic Engineers, Hotel Commodore, New York City, Sept. 24-27.

Institute of Traffic Engineers, annual meeting, Commodore Hotel, N. Y. City, Sept. 24-27.

American Institute of Park Executives annual convention, Baker Hotel, Dallas, Tex., Sept. 25-28.

Building Research Advisory Board—Research correlation conference, National Academy of Sciences, Washington, D. C., Sept. 26.

Pennsylvania Water Works Association, Claridge Hotel, Atlantic City, N. J., Sept. 26-29.

Rocky Mountain Sewage Works Association, La Fonda Hotel, Santa Fe, N. M., Sept. 27-29.

South Dakota State Association of County Commissioners, Auditors, Highway Superintendents and State Highway Officials, annual convention, Cataract Hotel in Sioux Falls, Sept. 28-30.

National Council of State Boards of Engineering Examiners, Congress Hotel, Chicago, Ill., Oct. 9-11.

ASCE, fall meeting, Congress Hotel, Chicago, Ill., Oct. 11-14.

Public Works Congress and Equipment Show, 9th Regiment Armory, New York City, Oct. 15-18.

National Association of Housing Officials, Detroit, Mich., Oct. 16-19.

National Conference on Industrial Hydraulics, Sherman Hotel, Chicago, Ill., Oct. 18-19.

Pennsylvania section, AWWA, Roosevelt Hotel, Pittsburgh, Pa., Oct. 18-20.

Engineers' Council for Professional Development, Tudor Arms Hotel, Cleveland, Ohio, Oct. 20-21.

National Public Health Engineering Conference, University of Florida, Gainesville, Oct. 23.

Structural Clay Products Industry, Broadmoor Hotel, Colorado Springs, Colo., Oct. 23-26.

American Institute of Steel Construction, Shamrock Hotel, Houston, Tex., Oct. 23-26.

American Concrete Institute, Mayflower Hotel, Washington, D. C., Oct. 24-26.

Carolinas Branch, A.G.C., White Sulphur Springs, W. Va., Oct. 30-31.

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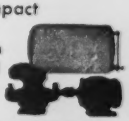

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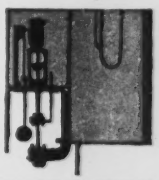

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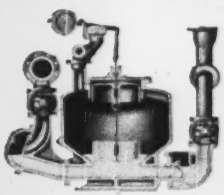

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EDUCATION and RESEARCH

Housing research

The Housing research project of the Research Foundation of the University of Toledo will be expanded, with the recent signing of a $20,000 U. S. Army contract, says Archie N. Solberg, executive director. Originally the foundation was awarded a $5,000 contract by the Federal Housing and Home Finance Agency. Part of the fee from the new Army contract will be spent on equipment, Dr. Solberg said, resulting in a $15,000 concrete materials laboratory. The work will be done by Toledo University faculty members, under supervision of John Selden, co-ordinator of housing research. The foundation has also received $5,000 from the National Brick Co., New York, for equipment, and donations of other facilities worth about $2,000 from various manufacturers.

At Tuskegee—A two-year contract between the Housing and Home Finance Agency and Tuskegee Institute, Alabama, to extend Tuskegee's research into production of homes in rural areas for small cash outlay has been announced by the Housing and Home Finance Agency.

Ways to produce the shell of a house for low cash cost through the use of local raw materials and by the family supplying the labor have already been demonstrated at Tuskegee, Mr. Foley said.

Studies in building techniques that produce homes for low money outlay have been under way at Tuskegee since 1940, when a Department of Housing Research was established there. The building methods employed are based on the principle of self-help, the philosophy on which the Institute was founded, and the use of building materials readily accessible in the area. The present research is to investigate the possibilities of extending the benefits of this process through pooling the labor and skills of several families for the construction of the houses which they are to occupy.

The contract with Tuskegee calls for complete documentation of the experience in the construction of ten or more experimental dwellings by a cooperating group of low income rural families. A detailed record will be kept of the costs incurred and cash outlay for each house and the hours of self-help expended. Such data will be needed to ascertain the extent to which these methods of building can bring housing effectively within the economic means of families not only in the Tuskegee area but in other parts of the country where similar conditions exist.

Basementless houses—When is it necessary to extend the foundation of a basementless house below frost-line?

To answer that question, the Small Homes Council of the University of Illinois is undertaking a one-year research project in cooperation with Levitt and Sons, Inc., builders and developers of the Levittown subdivision at Manhasset, N. Y. A research grant has been given to the University by Levitt to carry out the project.

While in northern areas it is customary to extend the foundation of a basementless house below the frost line, the merits of this practice have never been subjected to research scrutiny. Since such construction is a major cost factor in a small house, it is believed that research might show how costs can be cut. In some areas, grade beam foundations (those which do not extend below frost) have been used successfully, but not under controlled conditions or scientific observation.

MAN-MADE EARTHQUAKES—Manufactured miniature earthquakes are being used by the Bureau of Reclamation to determine the site for a tunnel to carry water through the Frenchman Hills south of Quincy, Wash., on the Columbia Basin project. The dynamite blast is set off, creating an artificial earthquake which sends seismic waves through the ground to the geophones. Dart Wantland and his geologic aide, Richard Galster, study the seismogram (seismographic pictures), showing the arrival of the earthquake waves at each of six geophones. Analysis of this record gives the depth to bedrock.—Photo by H. E. Foss, Bureau of Reclamation

A series of house-sized floor slabs and foundation walls, typical of those being used in small house construction, will be built at the Small Homes Research Center for purposes of the study. These will include concrete-block rim-walls with footings below frost-line, and thickened edge slabs or grade beams.

This advisory board for the project has been set up: Laurence Shuman of the Technical Branch, Housing and Home Finance Agency; Harold Bills, Federal Housing Administration; W. H. Scheick, executive director of the Building Research Advisory Board; D. E. Parsons, chief of the Building Technology Division, National Bureau of Standards; W. E. Snow, Association of Home Builders; all of Washington, D. C. Also I. G. Jalonack of Levitt & Sons, Inc., and Professor Lendrum.

Educational Notes

Appointments—Ellwood Hendrickson has been appointed associate professor of civil engineering and associate research engineer for the Engineering and Industrial Experiment Station of the College of Engineering of the University of Florida. Joseph O. P. Hummel has been named associate engineer and Theodore Jaffe, interim assistant professor of civil engineering.

Public Health engineering—The Graduate Division of the New York University College of Engineering will offer "Special Problems in Sanitary and Public Health Engineering" as a new course in September. It will be given by Associate Professor William T. Ingram and will cover special studies in sanitary and public-health engineering and reports on those studies. Subject matter includes field investigations, report preparation and oral discussion of housing-sanitation appraisal, community-sanitation planning, public-health engineering administration, waterworks and sewage works operation, industrial sanitation and hygiene, refuse disposal, and insect vector control.

Industrial hygiene fellowship—The James E. Kemper Foundation of Chicago is offering a graduate fellowship in industrial hygiene at Harvard University. It covers tuition at the Graduate School of Arts and Sciences in addition to an allowance for living expenses. Applications are invited from young men who are graduates of approved engineering, chemistry or physics schools, and should be made to H. L. Kennicott, executive secretary of the foundation at the Mutual Insurance Bldg., Chicago 40, Ill.

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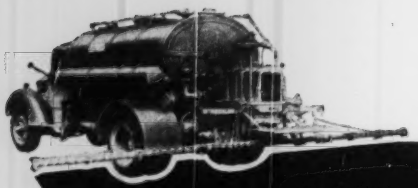

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OBITUARY

Ralph G. Stowell, 68, who died at Daytona Beach, Fla., July 26, was project manager on numerous dam and bridge jobs in the Mississippi Valley, Tennessee, Florida, Louisiana, Missouri and the East. Among these were locks at New Boston, Ill.; dams at Hannibal, Mo., and Lancaster, Tenn. (for the U. S. Engineers); bridges at Cape Girardeau, Mo., Tampa, Fla., St. Augustine, Fla., Vicksburg, Miss., Monroe, La., and many others. He was widely known for his original contributions to caisson work including the use of air in this field. Mr. Stowell retired about a year ago.

James R. Fairman, 64, Scarsdale, N. Y., died Aug. 3. A civil engineering graduate of the University of Missouri, 1909, he was with the Portland Cement Association from 1920 to 1937, when he resigned as eastern regional manager at New York to become assistant to the vice-president of Pennsylvania-Dixie Cement Corp. In the first World War he was with the 31st Railway Engineers. He retired from the Army in 1919 with the rank of major.

Carl G. Woerner, 44, a construction manager of the George A. Fuller Co., New York, died at Summit, N. J., July 28. Among the projects which he superintended were the Dodge Chicago plant, the laboratories of the Standard Oil Co. of N. J., at Linden, N. J., and a Newark building for Anheuser Busch.

George M. Rowe, 47, assistant division engineer of the Southern Pacific Railway at Oakland, Calif., died recently.

Alexander J. Barclay, 79, retired head civil engineer of the Southern Pacific Co., died at Berkeley, Calif., recently. At the time of his retirement from the railroad nine years ago he was chief engineer in charge of constructing the multi-million dollar Union Passenger Terminal in Los Angeles. He was with the company for more than 50 years and during his career had supervised construction of about 30 tunnels.

John B. Gillars, 48, died at Harrisburg, Pa., recently. He was a prominent engineer in the Central Pennsylvania district where he had been the resident engineer for many construction projects.

Frederick Goodman Vent, 77, former engineer in the bridge department

of the Illinois Central Railroad, died Aug. 6 in Berrien Springs, Mich. He was retired in 1945 after 48 years of railroading.

William Ellis Rankin, 79, assistant superintendent of the city water department at Ashville, N. C., died Aug. 4. He had been connected with the department for 30 years.

Paul T. Bradley, 62, president of the Bradley Co. Inc., engineers, died Aug. 1 at Philadelphia, Pa. He was a graduate of the Virginia Polytechnic Institute.

Joseph A. Meaney, 53, an engineer of Philadelphia, Pa., died July 29 at Ventnor, N. J. He was the president and founder of the Transmission Engineering, Co. and the Norbrom-Farrell Engineering C. He was a graduate of the Stevens Institute of Technology.

William M. Smelo, 67, a civil engineer and builder, died Aug. 3 at Philadelphia, Pa. He was president of Semlo-Peters-Milgram, Inc. of Philadelphia. He was a graduate of Penn State College, 1909.

Portland's 3-mi. sewer tunnel

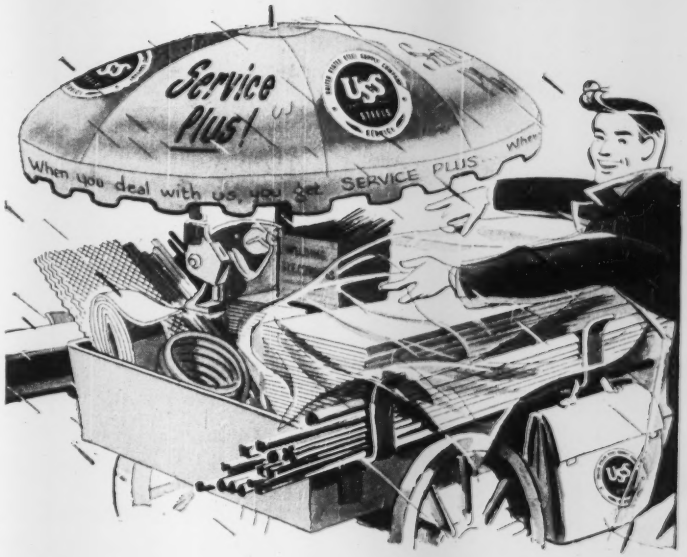
One-hundred-and-sixty feet below the street surface, sandhogs working from opposite ends of a three-mile long tunnel, unit of the $16 million sewage disposal project at Portland, Ore., joined hands recently after a year of digging.

The big bore, horseshoe shaped, 8 ft wide and 8 ft high, costing around $3,000,000, will carry sewage from Portland's business district on the west side of the Willamette River, and portions of the residential east side, to a sewage treatment plant near the Columbia River. It passes directly under the thickly populated Peninsula district.

From the viewpoint of engineers who planned the project, the breakthrough was a complete success, as the two sections matched perfectly according to A. M. Coker, project manager for Peter Kiewit Sons Co., contractor, and Dan Curran, the city resident engineer.

Crews worked around the clock to complete the project on schedule time. The job required 35,000 man-days of labor, or a crew of 45 men every 8-hr. period through day and night for most of the year. A million-and-a-half board feet of lumber went into the shoring and nearly 2 million pounds of steel was used to insure strength of the tunnel.

Only pouring of the concrete walls remains to complete the project.



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UNIT PRICES BID BY CONTRACTORS

Captree bridge substructure, Jones Beach, N. Y.

The letting June 30, 1950, for Contract 2, 4½ miles of substructure on Captree State Parkway for Jones Beach State Parkway Authority, drew six bidders and a low bid of $3,344,346. This is 18% below the second bid and 30% below the high. Arthur E. Howland is chief engineer. Hardesty and Hanover, New York City, are consulting engineers.

The contractor must furnish all tools, equipment, labor and materials for substructure construction for bridge and trestle across Great South Bay and a bascule bridge across State Boat Channel. The present contract does not include embankment, superstructures, paving or toll collection facilities.

The bridge over Great South Bay will be 10,800 feet long and carry a 24-ft roadway. It extends from Montauk Highway to the east end of Ocean Parkway on Captree Island, Suffolk Co., N. Y.

Concrete piers supported on untreated timber piles will carry the three main spans including one 600-ft cantilever and two 233-ft anchor spans, and twelve deck plate girder spans and precast 24-in. concrete pile bents will carry 129 I-beam spans. Abutments will rest on 18-in. precast concrete piles.

The State Boat Channel crossing structure will have two bascule piers (double leaf, 130-ft span), six fixed span piers and two abutments, all of concrete. The abutments will be on 18-in. precast concrete piles. Steel sheet piling for the piers will be left in place to prevent scour.

The pier shafts will be protected against salt water and ice by wrought iron plates, the concrete piles by creosoted timber jackets. The bascule piers will have fenders of creosoted timber and piles. Maximum water content of the concrete will be 6 gallons per bag of cement.

This work must be completed by July 1, 1951. Any vehicles of the contractor's using the existing causeways to Jones Beach State Park are subject to the toll charge.

Minimum wages to be paid are: Common laborers, $1.70 an hour; truck drivers, $1.63½; carpenters, $2.50; waterproofers, $2.75; iron and steel workers; structural, $3.00; power equipment operators, $1.70-$2.87½.

Bidders include:

1 J. Rich Steers, Inc., N. Y. C. Contract	$3,344,316
2 Spearin, Preston & Burrows, Inc., New York, N. Y.	4,081,911
6 Johnsen, Drake & Piper, Inc., New York, N. Y.	4,773,020

Items		Quantity	Unit Prices 1C	2
Portland cmt	bbl	44,700	$5.50	$5.70
Spec ptld cmt	bbl	50	5.00	9.60
Natural cmt	bbl	3,060	5.00	6.00
Conc-pier bases				
Bay bridge	cy	9,500	60.00	94.50
Channel bridge	cy	3,400	50.00	111.00
St sheet piling, lip				
Channel br	sf	15,400	4.25	4.25
Conc shafts & piers				
Bay bridge	cy	4,280	37.55	40.20
Channel bridge	cy	1,400	34.10	53.00
Conc-pile caps	cy	1,100	100.00	61.50
Conc-abutments				
Bay bridge	cy	520	48.80	58.00
Channel bridge	cy	680	49.70	59.50
Bit matl watrpr	gal	400	.65	3.20
Bar reinf, struc	lb	5,380,000	.15	.164
WI protect plates	sf	10,300	5.10	10.00
Untr timbr fndn piles	lf	143,000	1.60	1.92
Pile shoes for timbr piles	ea	3,160	4.00	2.00
Prec conc pile				
24"	lf	47,000	9.00	9.25
18"	lf	9,800	7.00	5.17
Tr timbr, in conc pile casings	Mbm	100	650.00	625.00
Metal in conc pile casings	lb	100,000	.75	1.00
Test piles				
Timber	ea	3	800.00	575.00
24" prec conc	ea	8	1,500	1,006
18" prec conc	ea	4	1,400	1,250
Load tests, timbr	ea	3	2,500	3,440
24" prec	ea	5	4,000	4,830
18" prec	ea	3	3,000	3,390
Creo timbr piles— fenders	lf	8,800	2.00	2.33
Creo timbr, fndrs	Mbm	35	500.00	660.00
Metal in fendrs	lb	35,000	.40	.41
Struc steel	lb	57,000	.17	.228
Misc metal	lb	13,000	1.40	1.14
Elec equip	ls	.....	27,000	17,701

Fencing for game refuge McPherson Co., Kansas

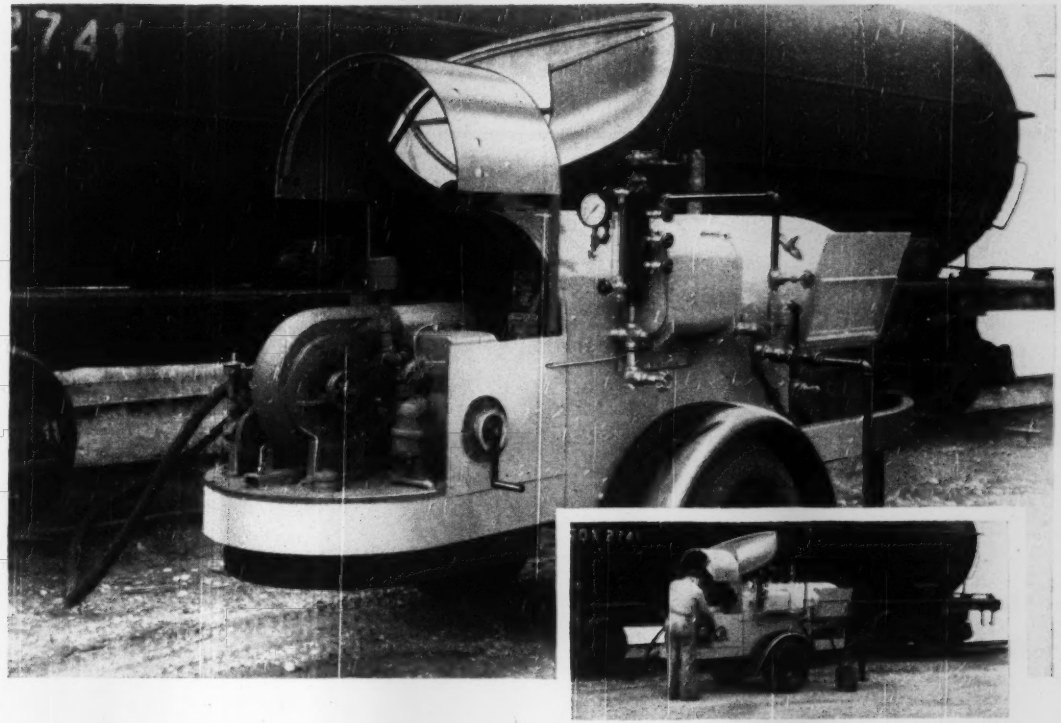
A bid of $14,183, from Deer Landscape Co., Neodesha, Kan., was low of 7 bids on fencing at the Maxwell Game Refuge, McPherson Co., Kan. The only bid below the engineer's estimate, it was 41% below the high and 13% below the next to low. Wilson and Co., Salina, are engineers.

The work is 6 miles north of Canton and a railhead. It includes setting 10-ft creosoted posts 3 inches in the ground; installing 7-wire fencing of galvanized steel barbed wire and copper ground wire; installing galvanized 7-strand guy wire cable at creek crossings; and installing commercially-constructed gates and accessories. The contractor must furnish all materials, labor and equipment and must complete all incidental work, including backfill, cleanup and disposal without additional expense to the owner, Forestry, Fish and Game Commission.

The job was started July 1, 1950 and must be completed Sept. 1. Wages being paid are: skilled labor, $1.50; semiskilled, $1.10; common, $.80. Bidders included:

1 Deer Landscape Co., Neodesha, (contract)	$14,182.50
2 Elmer N. Nelson, Manhattan, Kan.	16,250.00
3 Train's Const. Co., Lindsborg	23,919.25
Engineer's estimate	14,802.00

Items		Quantity	Unit Prices 1C	EE	7
Line fence	lf	57,750	$0.23	$0.25	$0.385
Creek crossing fence	lf	330	2.00	.65	4.20
Gates, complete	ea	3	80.00	50.00	100.00



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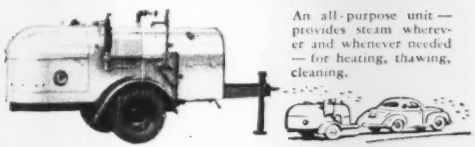

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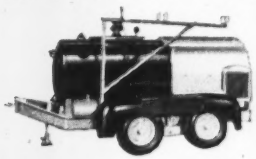

Heat only what you need — not necessary to heat contents of tank car — with a Cleaver-Brooks Pumping Booster. No steam or water required for operation with this oil-fired, high efficiency unit. Available in 2 sizes, skid or trailer mounted.

Write on your business letterhead for the Bituminous - Mix Calculator — a ready reference slide rule showing weight of mix needed in lbs. and tons based on area and depth of area to be covered.

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Designed for fast steaming, the Cleaver-Brooks gives you 125 lbs. steam pressure in 20 minutes — the only tank-car heater with the fuel-saving four-pass flue travel construction. No water problem — full condensate recovery and return to heater under pressure.

Built for full capacity—full time work—available in three sizes, skid or trailer mounted 1 car heater (17 bhp) — 2 car heater (28 bhp), 3 car heater (42 bhp). Write for the Cleaver-Brooks Tank-Car Heater Catalog.

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A M

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

WATER SUPPLY

BIDS ASKED

Minn., Minnedosa—B. A. 9/7—T. H. Murton, Minnedosa, water supply sys. Plans deposit $10. T. H. Porter, Portage La Prairie, engr. CD 2/15/46.

LOW BIDDERS

N. C., Spencer—Town, W. H. Barnett, mayor, Spencer, improv. municipal water distrn and sewerage sys., from Myers Constr. Co., Monroe Rd., Charlotte, $103,343; water distr. sys. only, from A. P. White & Assoc., 104 Latta Arcade, Charlotte, $46,844.

Tex., Center—City, Aug. 3, improv. WW. Item 2, from Aydas Bake & Steed, P. O. Box 573, Tyler, $143,586. Est. $175,000. CD 7/31.

CONTRACTS AWARDED

Ill., Taylorville—City, improv. water sys. incl. treatment plant, to G. E. Tillman, Inc., 113 S. Hickory St., Centralia, $296,992***4 well pump stations, to Caldwell Eng. Co., Jacksonville, $44,980***elevated water tank, to Chicago Bridge & Iron Co., 320 S. Michigan St., Chicago, $104,560***installing water mains, supply lines, mechanized joint pipe to W. L. Hull, Decatur, $298,883. Grand total $745,415. Est. $835,740. Bids 7/1, awarded 8/7. CD ——.

Mich., Ishpeming—City, Municipal Offices, distr. water mains, incl. hydrants, appurtenances in various streets, to A. Lindberg & Sons, Ishpeming. Approx. $178,500. Drury, McNamee & Porter, State Savings Bank Bldg., Ann Arbor, engrs.

Wash., Midway—Water Dist. 75, 23407 Pacific Hy. S., 9½ mi. to 8-in. steel distr. sys., in L.I.D. No. 6 in 1 Ave. S., pipe to Pacific Water Works Supply Co., 2400 1 Ave., Seattle, $70,000, installation by day labor $85,000.

Ont., Hamilton—City, L. Jackson, mayor, supplying steel water pipe and fittings for 36 in., 42 in. and 48 in. water mains, to Hamilton Bridge Co. Ltd., Bay St. N. Approx. $904,486. CD 7/30/43.

SEWERS, WASTE DISPOSAL

LOW BIDDERS

Wash., Kelso—City, City Hall, Aug. 7, subtrunks and laterals, sewers, Butlers Acres, Unit 5, from M. E. Olds, 3112 N. 2 St., Tacoma, $53,006, est. $52,168 **trunk sewer and force main from North Kelso, Unit 2, from Valley Constr. Co., 7708 Rainier Ave., Seattle, $64,023, est. $77,636.**treatment plant addn., Unit 1, from Rushlight Automatic Sprinkler Co., 55 N.W. Farragut St., Portland, Ore., $308,444. CD 7/24.

CONTRACTS AWARDED

Tex., Dallas—City, City Hall, sanitary sewers at White Rock Disposal Plant, to W. to Cullum & Wattie Constr. Co., 6841 Navajo Dr., Dallas, Tex., $547,104. Bids 8/1. CD 8/4, under LB.

Tex., Houston—C. E. King & Assoc., 4110 Dennis St., sanitary and storm sewers, in 3000 acre tract off Humble and Mt. Houston Rds. Owner builds. Approx. $175,000. CD 7/27.

Tex., Mesquite—Carl M. Brown, 1350 Buckner St., Dallas, constr. sanitary and storm sewers. Owner builds. $118,350. CD 7/24.

Ont., Fort William—City, D. M. Martin, clk., sewage disposal sys. and pump station, to Hacquoils Constr., 228 Gore St. W. Approx. $234,105. CD 1/19/49.

Sask., Carrot River—Province of Saskatchewan, Regina, drainage sys. to cover area from Saskatchewan River to the Carrot River, day labor. Approx. $100,000.

BRIDGES

CONTRACTS AWARDED

Illinois—State Dpt. H. Wks. & Bldgs., Div. Hys., Springfield. 0.68 mi. 34 ft. concrete pavement approaching south bound lane to C. B. & Q. R. R. overpass on F. A. Rte. 5 (U.S. Rte. 66) about ¼ mi. north of Litchfield. Sect. 137-W. Proj. FAUH-1-(30)137-F. F. A. Route 5. Dist. 9. Montgomery County. Sangamo Constr. Co., 701 N. Main St., Bloomington, Ill., $85,332. Est. $84,100. Bids 7/21. CD 7/22.

▲ New Jersey—New Jersey Turnpike Auth., Walter Memorial Bldg., Trenton. Contr. A7, constr. 1 steel rein. con. bridges, and 2 rein. con. multiple arch slant type bridges, together with incidental grading, drainage and paving, in connection with constr. of 8 between Mansfield and Allentown, Burlington and Mercer counties, to Joseph M. Pregnoli & Son, Inc., 777 W. East Line St., Bridgeton, N. J. $1,380,469. Bids 7/31, awarded 8/7. CD 8/10, under LA. (Correction of contract price).

Pennsylvania—State Hy. Dpt., Harrisburg. Steel I-beam bridge erected by constructing two 2 ft. wide width lanes of 2 conc. pavement on each side of C. conc. bridge, divided by constructing two 23 ft. width lanes of plain conc. base with 1½ in. crown on each side of concrete divider, with pavement with plain c. conc. base with bit. surf., 2 ft. crushed aggregate base with bit. surf., 48 ft. and variable in width and c. conc. pavements for paving railroad crossing 6,812 ft. L.R. 91 (15B) T.R. 8, over French Creek, Franklin, Venango Co., to Ferguson & Edmundson Co., Keystone Bldg., Pittsburgh, Zone 22. $456,727. Bids 7/25, awarded 8/9. CD 8/1, under LB.

Pa., Pittsburgh—City, Dpt. P. Wks., City Hall, floor system Herron Ave. Bridge over P. R. R. and B. & O. R. R., to Carl Jacobson Jr., Sharpsburg, $124,681. Est. $153,000. CD 11/12/47.

Que., Montreal—Canadian Pacific Ry. Co., J. E. Armstrong, gn. engr., Windsor Station, Montreal, Zone 3, railway bridge exten., Mountain St., to Atlas Constr. Ltd., 4781 W. Ste. Catherine St., $120,000.

STREETS AND ROADS

BIDS ASKED

Ind., Fort Wayne—B.A. 8/24—Bd. Wks., City Hall, open East Berry St. from Monroe to Francis Sts., incl. excav. approx. 4,000 cu. yd. earth constr. 100 ft. retaining wall just east Monroe St., 1,000 sq. yd. 8 in. c. conc. pavement, moving railroad sidetrack leading to Moran Ice Co., etc. $85,000. CD 5/31.

Mich., Clio—B.A. 8/30—City, Mayor Claude Babcock, Clio, base course b. conc. 13,828 sq. ft. Center St. from Vienna to Griffes, 673 lin. ft. curbs and gutters with catch basins, base course and surf. 39,422 sq. ft. Center St. from Vienna Bluff, 1,304 lin. ft. curb and gutter. Plans deposit $5, refundable to bidders, West Eng. Co., 1665 N. Chevrolet Ave., Flint, engr.

N. J., Mount Holly—B.A. About 9/1—Twp. Com., Mount Holly constr. Mt. Holly Ave., Washington, Grant, King, Water, Buttonwood, Cherry, Main, Front, Brainerd and White Sts. $50,000. Wilbur M. Gibbs, Mill St., engrs.

Tex., Levelland—B.A. 9/6—City, 80x200 lin. ft. concrete curbs, gutters, paving 150 blocks, etc. $150,000. Extended date. Plans deposit $25. K. Harper, Levelland city engr. CD 6/7.

N. J., Trenton—Bids Asked—Mercer Co. Freeholders, Trenton, widn., rebuilding hy. from Penns Neck traffic circle to Delaware Raritan Canal Bridge, $95,000. Edward L. Mount, co. engr., CD 12/21/44.

LOW BIDDERS

▲ Idaho—State Hy. Comm., Boise, reconditioning roadbed constr. roadmix bit. surf. 8.182 mi. Emmett-New Plymouth Hy., Gem Co., crushed gravel resurf. and bit. surf. 10.824 mi., U.S. 30, Gerhart Co., from Hoops Constr. Co., Twin Falls, $96,033, est. $109,510 and $79,011, est. $84,941***constr. 19.295+ mi., Twin Buttes Hy. between Idaho Falls and Atomic Energy Station, Butte and Bingham Counties from Pickett & Nelson, Idaho Falls, $937,794, est. $732,230*** roadmix bit. surf. 4.676 mi. Elk River Hy. between Santa Junction and Fernwood, Benewah Co., from Grant Constr. Co., Coeur d'Alene, $110,754, est. $110,014.

† Missouri—Bureau P. Roads, Dpt. Commerce, Office of Dist. Hanger, U. S. Forest Service, Fredericktown. 5.425 mi., Missouri Forest Hy. Proj. 37-A, Part 2, Iron and Madison Counties, from Chappel Constr. Co., DeSoto, $65,340. H. J. Spellman, c/o Bureau P. Rds., 115 Nevada St., Hot Springs, Ark., engr. CD 7/12.

Tex., College Station—Agricultural & Mechanical College of Texas, College Station, paving road and area adjacent to Student Center, from C. L. Andrews, Bryan, $81,260. C. K. Leighton, c/o owner, college constr. engr. CD 9/30/49.

Wisconsin—State Hy. Comm., Madison, Aug. 8, grav. surf. 4.11 mi., U.S. H. 18 Rd., C.T. Hy. C. Proj. P.O.-2-(2), Grant Co., from H. Turner & Son, Boscobel, $120,606***c. conc. 4.095 mi., Custer-Amherst Junction Rd., U.S. Hy. 10. Proj. F 014-3 (1), Portage Co., from Vinton Constr. Co., Manitowoc, $191,010 ***grading, draining 8.824 mi. Misha Mckwap-North Co. Line, Fourth Co. Line, Durand Rd. Proj. F-046-1 (7) and F-046-1 (9), Buffalo and Pepin Counties, from P. C. Kaiser, Portage, $150,522***grading, draining, 11.384 mi., Rhinelend-Laona Rd., Crandon-Laona Rd., U.S. Hy. 8, Proj. F-021-5 (14) Forest Co., from John E. Bloomer Co., Appleton. $375,307. CD 7/26.

CONTRACTS AWARDED

Ill., Peoria—City, C. conc. Florance Ave. between University St. and Sheridan Rd., to S.M.H. Constr. Co., 2500 N. Adams St., $93,147. Est. $93,287. Awarded 8/7. CD 9/15/49.

Iowa—State Hy. Comm., Ames, improv. 55.256 mi. Franklin Co., to Perry Constr. Co., Perry, $87,055; improv. 22.598 mi. Cass Co., to Missouri Valley Limestone Co., 409 E.T. Bldg., $52,590. Bids 8/1. CD 7/22.

Kan., St. Francis—City, curbing, guttering streets, to Wilcox Constr. Co., Wauneta, Neb., $55,000.

Kentucky—State Hy. Comm., Frankfort, bit. surf. Class E, 11.683 mi. Proj. RS (51.4591) (51.5594) combined, Henderson Co., to Paul A. Teegarden Inc., Columbia, Ind., $122,603. Bids 7/21. CD 8/2.

▲ Pennsylvania—State Hy. Dpt., Harrisburg, divided hy. incl. c. conc. pavement 22 ft. wide on each side of earth divisor area 20 ft. and variable in width and incl. 6 rein.-con. structures, c. con. variable 30 ft. to 49 ft. in width all on Route 129. Sect. 211, divided hy. consisting of c. conc. 22 ft. wide on each side of an earth divisor area 20 ft. and variable in width and incl. 5 rein.-con. structures and one rein.-con. bridge, constr. consisting replacement of widn. existing pavement with c. conc. 11 ft. wide and crushed aggregate base each 5½ ft. to 7 ft. in width, variable width earth and c. conc. divisor area and exten. rein.-con. structures, on Route 129. Sects. 11 and 124. Schedule 3, proj. as whole 28.498 ft. from point in Greensburg City east to point beyond intersection of L.R. 129 and 64040, Greensburg City Hempfield and Unity Twps., Westmoreland Co., to C. J. Langenfelder & Son, Inc., P.O. Box 5206, Baltimore, Md., $2,449,711. c. conc. 33 ft. and variable in width and incl. 7 rein.-con. structures 29.499 ft. L-195 6A T.R. US-11-15 from Amity Hall to point south of Half Falls, Watts Twp., New Buffalo Boro, Perry Co., to Nello L. Teer Co., Durham, N. C., $1,248,541. Bids 7/28, awarded 8/9. CD 8/1, under LB.

Tex., Dallas—Wiley Roberts & Sons, 1922 W. Jefferson St., asphl. street paving, area adjacent to Desley Estates, N.W. Oak Cliff, to B. G. & J. Roberts, 1922 W. Jefferson St. $62,500. CD 7/24.

Tex., Houston—C. E. King & Assoc., 4110 Dennis St., constr. and asphl. streets in 3000 acre tract off Humble and Mt. Houston Rds. Owner builds. Approx. $100,000. CD 7/20.

Tex., Mesquite—Carl M. Brown, 1350 Buckner St., Dallas, constr. asphl. type paving streets. Owner builds. Approx. $75,000. 7/19.

Tex., Whitney—Hill Co., Court House, Hillsboro, grading connecting roads in area, force account. $50,000. CD 10/18/48.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada; are of these minimum sizes or larger: water supply, earthwork, waterways $28,000; other public works $50,000; industrial buildings $68,000; other buildings $250,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects unless award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
▲ Project at $1,000,000 or over.
B.A. Bids Asked.
ENR Engineering News-Record
CD Engineering News-Record Construction Daily

EARTHWORK, WATERWAYS

BIDS ASKED

† Indiana—B.A. About 8/30—U. S. Eng., 830 W. Broadway, Louisville 3, Ky., repairing Blocksom and Jenckes Levees, Vigo Co. CIVENG 15-0294-51-16, repairing Hollowell Farm Levee, Morgan Co., CIVENG 15-029-51-17.

N. S.—Breen's Pond—B.A. 9/30—Acting Secy. Dpt. Pubs. & Hunter Bids, Ottawa, Ont., breakwater replacement. Approx. $70,000. Plans, deposit $20. R. Blais, c/o owner, engr.

† Missouri—B.A. 9/6—U. S. Eng., P.O. Box 97, Memphis 1, Tenn., clearing approx. 5 mi. levee in Upper St. Francis Levee Dist., Item No. R-847 R, along right bank of Mississippi River in New Madrid Co., CIVENG 40-031-51-21.

LOW BIDDERS

Pennsylvania—Dpt. Forest & Waters, 404 Education Bldg., Harrisburg, Aug. 8, dredging Auburn Pool at Auburn Desilting basin, Schuylkill River Desilting Project, from American Dredging Co., 12 S. 12 St.,

Phila., $539,048, est. $630,000; dredging Kernsville Pool at Kernsville Desilting Basin, Schuylkill River Desilting Project, Kernsville, Berks Co., from Eastern Eng. Co., 4 N. North Carolina Ave., Atlantic City, N. J., $338,975, est. $610,000. CD 7/27.

AIRPORTS

BIDS ASKED

† Mass., Squantum—TAXIWAY—B. A. 8/29—Officer in Charge Constr., First Naval Dist. Headquarters, 495 Summer St., Boston; constr. approx. 1,500 sq. yd. bit. paved taxiway, electrical alterations, Spec. 25130. Plans deposit $10.

LOW BIDDERS

▲† Alaska, Fairbanks—BARRACKS—U. S. Eng., (APO 442, c/o PM Seattle, Wash.) Anchorage, Aug. 1, one 2 and 3 story concrete 750-man barracks with hot bunnet, Bldg. 214 at Eielson Air Force Base, Inv. 595-507-50-22; from Chris Berg, 2730 Westlake N., Seattle, Wash., $1,301,175. CD 6/28.

CONTRACTS AWARDED

Mass., Worcester—HANGAR—City, City Hall, hangar, to Anderson Mfg. Co., 1700 Sawtelle St., West Los Angeles, Calif., $97,989. CD 10/21/49.

Mich., Detroit—WATER MAIN—Wayne Major Airport, Detroit, water main, appurtenances, Wayne Major Airport, Romulus, to Boam Constr. Co., 16249 Northlawn St., $318,570.

Pa., Pittsburgh—AIRPORT—Bd. Comrs., Allegheny Co., County Office, grading paving, Contr. G, East West Runway, Greater Pittsburgh Airport, to Ben Constr. Co., 101 Hargrove St., $895,250. Est. $900,000.

LATIN AMERICA

Trinidad, Pointe-a-Pierre—Trinidad Leaseholds Ltd., Port of Spain, awarded contract modernization refinery plant, to Foster Wheeler Corp., Port of Spain. Approx. $7,500,000. CD 12/21/49.

PUBLIC BUILDINGS

BIDS ASKED

Mich., River Rouge—HOUSING—B. A. 8/29—City of River Rouge Housing Auth., City Hall Annex, 1381 Coolidge Hy., Zone 18, apartments; FPH A Proj. Mich. 8-1 and Mich. 8-2. Over $250,000. Arthur Greig & Assoc., 10538 W. Jefferson Ave., Zone 18, archts.

N. J., New Lisbon—HOUSING—B. A. 8/29—State Div. Purchase & Property, State House, Trenton; housing at State Colony, $500,000. CD 5/15.

Que., Cowansville—DOMINION PUBLIC—B. A. 8/30—Acting Secy., Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., dominion public bldg., offices, etc. Approx. $250,000. Plans deposit $50. G. Brault, c/o owner, engr.

B. C., Osoyoos—CUSTOMS and IMMIGRATION—B. A. 9/6—Acting Secy., Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., customs and immigration bldgs. Approx. $275,000. Plans deposit $100. G. Brault, c/o owner, engr.

Mass., Wareham—SCHOOL—B. A. 9/8—Town, Town Hall, Marion Rd., 1 and 2 story, cinder block, concrete, steel high school, $895,000. Plans deposit $25. Downer & Root, 165 Newbury St., Boston, archts.

LOW BIDDERS

▲ La., Ruston—GYMNASIUM—State Bd. Educ., Baton Rouge, Aug. 7, gymnasium at Louisiana Polytechnic Institute, from Chas. Carter & Co., Inc., P. O. Box 1270, Baton Rouge. $1,080,000. Bids 8/7. CD 7/28.

▲ Mass., Springfield—HOUSING—City of Springfield Housing Auth., John J. Robinson, chn., 124 Putnam St., St., rejected bids July 28, veterans housing, $1,250,000. L. B. $1,545,454. Will re-advertise. CD 8/4, under LB.

Minn., Moorhead—LIGNITE HANDLING SYSTEM—City, P. A. Cook, clk., rejected bids Aug. 4, furnish, install lignite handling sys. at Municipal Power Plant. L. B. $150,000. Will re-advertise. CD 8/3.

Minn., Mound—SCHOOL—Bd. Educ., D. G. Nelson, supt., Mound, Aug. 3, general contract 2 story, 24 classroom school, from Faugle-Leck, Inc., 714 Baker Bldg., Minneapolis, $999,643. CD 7/12.

N. Y., Kings Park—SHOP—Dpt. P. Wks., State Office Bl. 1, Albany, Aug. 2, general contract reconstr. shop, Kings State Hospital, from Royal Contg. Co., 7412 New Utrecht Ave., Brooklyn, $76,543. CD 7/25.

▲ O., Akron—SCHOOL—Bd. Educ., 70 N. Broadway, July 31, East High School addn., from The John J. Jacobson Co., 1046 N. Main St., $638,145. CD 7/19; Kenmore High School addn., from John G. Ruhlin Co., 1024 Home St., $770,000. CD 7/5.

CONTRACTS AWARDED

▲ Ark., El Dorado—NURSES HOME—Warner Brown Hospital, El Dorado, general contract 2 story nurses home, 4 story brick, concrete, steel hospital addns., remodeling, altering hospital; to Harmon Constr. Co., P. O. Box 1414, Oklahoma City, Okla., $1,283,082. Bids 6/26. CD 7/5, under LB.

La., Jennings—SCHOOL—Jefferson Davis Parish School Bd., Jennings, high school; to Tudor Constr. Co., Box 1232, Alexandria, $549,212. Bids 8/3. CD 8/11.

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▲ Md., Catonsville — Sykesville — HOSPITALS — State Dpt. P. Imprvts., 506 Park Ave., Baltimore, 1 story, 295x334 ft., brick bldg., for disturbed women, Spring Grove State Hospital, Catonsville, to Charles R. Scrivener Co., Inc., 339 St. Paul Place, Baltimore, $925,000; 1 story, 295x334 ft. bldg. for disturbed men, Springfield State Hospital, Sykesville, to Mullan Contg. Co., 3945 Greenmount Ave., Baltimore, $1,845,000. CD 8/1, under LB.

Mass., Somerset—SCHOOL—Town, Supt. Schools, School Bldg. Comn., Junior High School and gymnasium, to Vara Construction Co., 718 Huntington Ave., Boston, $578,241. CD 8/4, under LB.

Mich., Spring Lake—SCHOOL—Town, School Bd., 2 story, brick, steel school, to Alstrom Constr. Co., 22 W. Western Ave., Muskegon, $283,700. Warren S. Homes Co., Olds Tower, Lansing, archt.

Pa., Torrance—NURSES HOME—General State Auth., 18 and Herr Sts., Harrisburg, general contract nurses home at Torrance State Hospital, to L.D. Building Co., P. O. Box 472, Latrobe, $554,000. Bids 6/28, awarded 8/9. CD 7/5, under LB.

† Wash., Richland—SERVICE CENTER—Atomic Energy Comn., 1901 Constitution Ave., N.W., Wash., W. C., records service center, to Critcher & Raber, 420 Queen Anne Ave., Seattle, $113,085

COMMERCIAL BUILDINGS

SOON LETS CONTRACT

Mass., Andover—FACULTY HOME—Merrimack College, North Andover, soon lets contract faculty bldg. $250,000. Joseph P. McGann & Richard Powers, 419 Boylston St., Boston, archts. William H. Kroposhl & Assoc., 51 Cornhill, Boston, engrs. CD 12/7/49.

LOW BIDDERS

Ind., Anderson—ADMINISTRATION—Guide Lamp Div. G.M.C., 25 and Arrow Sts., general contract 2 story, bsmnt., 60x280 ft., administration bldg., from Huber dust & Nichols, Speedway, Indianapolis. Est. $250,000. CD 6/1.

Kan., Ottawa—HOSPITAL—Bd. Trustees Ransom Memorial Hospital, Ottawa, cancelled bids Aug. 1, brick, rein.-con. hospital addn. $400,000. Will re-advertise. CD 5/1.

CONTRACTS AWARDED

▲ Calif., Sacramento—RESIDENCES—Arden Manor Investment Co., 616 Eye St., 206 residences in Arden Manor 1, to Murphy & Murphy, 3443 Hurley St., $1,160,000.

Calif., San Lorenzo—RESIDENCES—Greenwood Corp., 859 San Mateo Dr., San Mateo, 81 residences on Via Cordoba Via Toledo, Via Juan, De Marlin and Passeo Grande, to D. D. Bohannon Co., 859 San Mateo Dr., San Mateo, $610,800.

Calif., Walnut—SHOPPING CENTER—MacDonald Products Co., 1 Montgomery St., San Francisco, 14 concrete steel bldgs. on shopping center at Botetto Island, owner builds. $881,000. Robt. B. Giles, 2280 Palon Ave., San Francisco, archt.

Ill., Champaign—COMMERCIAL—W. T. Grant Co., 1441 Broadway, New York, N. Y., 3 story, 72x160 ft., steel commercial bldg., to Petry & Sons, Champaign. Est. $380,000. Awarded 8/3.

Mass., Lowell—SCHOOL—St. Jeanne D'Arc R. C. Church, 157 White St., school to Power Fontaine, 285 Main St., Woonsocket, R. I., $350,000. CD 7/7.

Mich., Detroit—MONASTERY—St. Therese of Child Jesus, Wyoming and Marygrove Dr., 2 story, brick, steel monastery, Wyoming and Marygrove Dr., to W. E. Wood Co., 4649 Humboldt St., Approx. $350,000. George F. Trent, 120 Madison St., archt.

Mich., Wyoming—SCHOOL—St. John Vianney R. C. Church, Floyd, Wyoming Township, 1 story, 8 unit, brick, stone school, to Hoekstra Const. Co., Parks and Floyd St., to Ray Stevens Co., Kalamazoo, Approx. $250,000. Roger Allen & Assoc., 1126 Grand Rapids National Bank Bldg., Grand Rapids, archts.

▲ Neb., Omaha—HOME—St. Vincent's Retreat for Aged, 45 and Ames Ave., general contract home for the aged to Paxton Constr. Co., 51 Grand Exchange, $1,358,773. Bids 8/8. CD 7/7, under LB.

▲ N. J., Haddonfield—RESIDENTIAL DEVELOPMENT—Haddonfield Villas, c/o contractor, residential development, Gladstone Ave., to W. H. Becker, 28 Haverford Rd., Runnemede, $1,380,000.

▲ N. J., Margate—RESIDENTIAL DEVELOPMENT—Max Hirsh, Exeter Ave., 100 residential development Ashvert Ave., to separate contracts, $1,500,000. R. Bayne Williams, 1005 Ventnor Ave., Atlantic City, archt.

N. J., Palmyra—APARTMENT DEVELOPMENT—Palmyra Park Apartments, 1716 Cheltenham Ave., Phila., Pa., apartment development, containing Ave. and W. Charles St., 7 separate contracts, $500,000. Edward A. H. Cox, 2 N. Main St., Moorestown, N. J., archt.

N. M., Albuquerque—HOSPITAL—Presbyterian Hospital Bd., Cert. W. Carson, pres. Bd. Trustees, Albuquerque, Ruth Hann Memorial Wing to Presbyterian Hospital, to O. G. Bradbury, 1217 N. 1 St., $764,746. Bids 8/15. CD 6/22, under LB.

▲ O., Columbus—STORES, etc.—Morehouse Martens Co., 130 E. High St., to erect 2 story, brick, steel, remodeling 2 store bldgs., separated by valley, with connecting bridge, new front, etc., into single bldg., to Jos. Walker & Co., 44 E. Broad St., Approx. $3,000,000. Mark Feinknopf, 150 E. Broad St., archt.

Pa., Mt. Keesport—APARTMENT—Versailles, Inc., 517 Walnut St., 3 story, bsmnt., 100x150 ft., brick, block apartment bldg., Versailles Ave., to Fritz Hammerberg, 1425 Ohio Ave., $500,000. Bids 8/2. CD 7/28.

▲ Pa., Phila.—RESIDENTIAL DEVELOPMENT—Lumar Park, Inc., 11600 Bustleton Pike, residential development Bustleton Pike, separate contracts, $1,710,000.

▲ Pa., Phila.—APARTMENT—Rittenhouse Claridge Co., 1325 Walnut St., Phila., apartment, 18 St. and S. Rittenhouse Square, to Claremont Constr. Co., 1620 W. Thompson St., Phila., Approx. $10,000,000. CD 3/8, under CA.

Pa., Phila.—RESIDENTIAL DEVELOPMENT—Stenton Hills Corp., 901 Sharpnack St., residential development, Anderson St., separate contracts, $620,000.

▲ Pa., Willow Grove—RESIDENTIAL DEVELOPMENT—Crescent Development Corp., c/o contractor, residential development, Terwood Rd., etc., to Smolin Constr. Co., 1315 Walnut St., Phila., $1,000,000.

Tex., Dallas—DWELLINGS—W. Leslie Hill, 4353 W. Lovers Lane, 100 dwellings. Owner builds. $400,000. CD 7/10.

Tex., Houston—DWELLINGS—Prokop Constr. Co., 5727 Kirby Dr., 64 addnl. dwellings in Pine Terrace addn. Owner builds. Approx. $475,000. Knostman & Webster, 2017 W. Gray St., archts. CD 7/31.

Wash., Seattle—HOUSES—Modern Home Builders, Inc., 1949 34 Ave. W., 33 houses at 47 Ave. S. and Morgan St., day labor, $265,900.

▲ Wash., Spokane—HOUSES—King Development Co., Hyde Bldg., 125 houses in area south of Manito Golf Course, day labor, $2,262,500.

W. Va., Buckhannon—DORMITORIES, etc.—West Virginia Wesleyan College, Buckhannon, 2 dormitories and library, to A. Farnell Blair, 1306 Spring St., Atlanta, Ga., Approx. $800,000. Poundstone Ayers & Godwin, Palmer Bldg., Atlanta, Ga., archts. CD 1/26/49.

Wis., Port Washington—SCHOOL—St. Mary's Catholic Congregation, Port Washington, general contract 2 story, bsmnt., 65x96 ft., steel, brick, block school addn., to Thos. Gehan, Port Washington. M. F. Pfaller, 8525 Ravenswood Circle, Wauwatosa, Zone 13, archt. CD 9/28/45.

Que., Montreal—HOUSING—Robert Cummings, c/o S. Gerson, archt., 1128 Phillips Pl., 108 units of housing development, Cote St. Michel Rd., to Leon M. Adler, 75 Manseau Ave., Approx. $702,000.

Que., St. Jerome—CHURCH, etc.—Parish of St. Marcel, St. Jerome, rein.-con., structural steel, frame, stone, block 60x175 ft. church and 35x52 presbytery; connecting offices, and parish hall in bsmnt., to Josaphat Bastien, 182 Briere St., St. Jerome; structural steel, to Canadian Structural Steel Works Co. Ltd., 4600 17 Ave., Rosemount, Approx. $250,000. L. Nicholas, 206 Labelle St., archt.

INDUSTRIAL BUILDINGS

CONTRACTS AWARDED

Ill., Chicago—FACTORY—Kux Machine Co., 6725 Ridge St., Zone 26, 1 story, steel, brick, concrete factory, to T. L. Hillbauer Constr. Co., 452 W. Belden St., Zone 14. $200,000. CD 6/14.

Mass., East Douglas—STORAGE—Woolen Mills, Inc., Hayward Schuster, Gilboa St., storage bldg., to R. H. White Constr. Co., 41 Central St., Auburn, $200,000. Chas. T. Main, Inc., 80 Federal St., Boston, engr.

Mich., Saginaw—PLANT—Sugar Beets Products Co., 502 Waller St., 1 story, 70x149 ft. brick, concrete plant addn., Waller St., to Arthur Vollmer Constr. Co., 222 N. Bates St., approx. $68,000.

N. J., Hamilton Twp.—PLANT—Salmanson & Co., Inc., Ferrier Ave., Trenton, 32,000 sq. ft. mfg. plant, to Edmond M. Happ, Acorn and Washington Sts., Doylestown, Pa., $963,000.

Okla., Oklahoma City—REPAIR SHOPS—Santa Fe Trailways, Inc., 120 W. 6 St., Topeka, Kan., repair shops, 120 East Washington St., to J. S. Corley Constr. Co., 270 N. Santa Fe St., Zone 5, $98,000. Est $125,000. Awarded 8/1.

Pa., Phila.—TRUCKING TERMINAL—Mason Dixon Lines, Inc., 2nd and Erie Ave., 2 story, brick 99,563 sq. ft. trucking terminal, to Lewis Contracting, 2614 Sansom St., Phila., $500,000. Allen & Dryden, 200 W. Market St., Kingsport, Tenn., assoc. archts. Leonard Shaffer, 926 Walnut St., Phila., engr.

Pa., Phila.—WAREHOUSE—Progress Mfg. Co., Germantown Ave. and Seventh St., 2nd story, 50x150 ft. brick, concrete block warehouse and industrial plant addn., separate contracts. Approx. $68,000. Max Haupt, 138 S. 9 St., Phila., engr.

Pa., Steelton—DIESEL ENGINE—The Reading Co., 12 and Market Sts., Phila., 1 story, 52x190 ft., brick masonry diesel engine bldg. addn., to John Stapp, 340 N. 6 St., Harrisburg. Approx. $100,000. E. L. Gosnell, c/o owner, engr.

Wash., Spokane—WAREHOUSE—American News Co., Sucksdorf Div., E. 3720 Sprague St., 50x170 ft. rein.-con. warehouse, to Central Constr. Co., W. 918 Mallon St. Approx. $88,000.

Wis., Milwaukee—STOCK HOUSE, etc.—Miller Brewing Co., 400 W. State St., Zone 8, 4 story, 105x132 ft. rein.-con., steel, brick stock house, to W. W. Deffen, Inc., 5345 N. Hopkins St., Zone 9. $300,000. B. G. le Febre & Co., C. Wigfus, 4508 N. Richards St., Zone 11, architects; mechanical, 3rd and 4th floor and roof of Old Bottle House, to Selzer-Ornst Co., 4222 W. State St., Wauwatosa, Zone 13. $100,000. C. Nagel & Assoc., 312 E. Wisconsin Ave., Zone 2, engr.

▲ Ont., Hamilton—PLANT, FURNACE, etc.—Dominion Foundries & Steel Ltd., Hamilton, furnace at plant, to John Mann & Sons, 1700 E. 76 St., Chicago, Ill., U.S.A. $4,500,000, erecting battery of coke ovens, to Koppers Co., Koppers Bldg., Pittsburgh, Pa., U.S.A. Approx. $4,500,000. CD 2/15/49.

Ont., Toronto—PLANT—British Oxygen Co. Ltd., south of Fenner Ave., plant, south of Fenner Ave., near Brown's Line, Etobicoke Twp., to Redfern Constr. Co., 145 Rd. Laird Ave., Leaside. Approx. $200,000. CD 4/26.

Que., Valleyfield—STERILE TECHNIQUE—Merck & Co. Ltd., Sent de Courcelles St., Montreal, 1 story, 60x100 ft., steel, brick sterile technique bldg. addn. at plant, to A. F. Byers Constr. Co. Ltd., 5675 Western Ave., Montreal. Approx $60,000. E. C. Miller, 485 McGill St., Montreal, archt. T. Pringle & Son, Ltd., 485 McGill St., Montreal, engrs.

UNCLASSIFIED

BIDS ASKED

† New Mexico and Texas—TRANSFORMERS, etc.—B.A. 9/5—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing del. f.o.b. cars shipping point or f.o.b. cars Albuquerque, N. M., transformer, tap-changing-under load equip., lightning arresters, circuits, mounted on transformer tank for Albuquerque sub-station, Rio Grande Proj., Spec. 3144. L. N. McClellan, ch. engr.

† Washington—OUTDOOR POWER CIRCUIT BREAKERS—B. A. 9/19—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing del. f.o.b. cars shipping point or f.o.b. cars Odair, optional 2 outdoor power circuit breakers, 3 interrupting outdoor power circuit breakers with disconnecting devices on both sides of each breaker for Grand Coulee 230 KV switchyards, Columbia Basin Proj., Spec. 3146. L. N. McClellan, Denver, Colo., ch. engr.

† Idaho, Arco—TRANSMISSION LINE—Bids Asked—Idaho Operations Office, Atomic Energy Comn., P. O. Box 221 Idaho Falls, constr. approx. 10 mi. 138 KV transmission lines at Atomic Energy Comn. Reactor Testing Station Butte Co.

SOON LETS CONTRACT

Ont., Hamilton—WHARF—E. D. Davis, ch. engr., c/o Dominion Foundries & Steel Ltd., Hamilton, Depew St., soon lets contract 800 ft. wharf sheet pile, 300 ft. overhead bridge crane at plant. Approx. $250,000. CD 2/15/49, under Industrial Buildings.

LOW BIDDERS

Ill., Chicago—SUBWAY—City, Dpt. Purchases, Contracts & Supplies, City Hall, Dearborn St. Subway Station Equip., Contr. T-24, incl. agents booths, lighting fixtures, etc. Order I from Schick-Johnson Co., 1737 N. Paulina St., $89,417; enamel signs, turnstiles, railings, etc., Order II from Metal Craft Constructors, Inc., 425 N. Superior St., $73,687. CD 4/26/45.

N. Y., Buffalo—SERVICE CONNECTIONS—Dpt. P. Wks., State Office Bldg., Albany, Aug. 2, service connections, incl. sewers, water and gas lines, Medical and Surgical Bldg. 52 and Power House 53, Buffalo State Hospital, from Henry M. Dechert Inc., 181 Allen St., $101,798. CD 7/25.

▲† Alaska, Fort Richardson—OUTSIDE UTILITIES, etc.—U. S. Eng., (APO) 942, c/o PM, Seattle, Wash., Anchorage Area, outside utilities in East expansion area, incl. grading, storm and sanitary sewers, steam distr. and electrical distr. facilities, Inv. No. SWS-507-50-29, from Morrison-Knudsen Co., Hoge Bldg., and Seattle, Wash., Peter Kiewit Sons Co., 2300 Aloha St., Seattle, Wash., $2,392,000. CD 7/10.

CONTRACTS AWARDED

Miss., Belzoni—NATURAL GAS—City, natural gas trans. mission main and distr. sys. in Delta Natural Gas Dist., to Clement Betpouey, Jr. & Co., Canal Bank Bldg., New Orleans, La., $599,625. Bids 7/24. CD 7/20.

Missouri—RURAL DISTRIBUTION LINES—Sac-Osage Electric Co-operative, El Dorado Springs, 262.07 mi. rural distr. lines and 46.72 mi. of conversion, Cedar Co., to Utilities Service Co., 600 Exchange Bldg., Nashville, Tenn., $397,215. Bids 7/22. CD 4/26/45.

Wyoming—RURAL DISTRIBUTION LINES—Tri-County Electric Assn., Sundance, 321 mi. rural distr. lines, Campbell Co., to Williston Constr. Co., Williston, N. D., $410,000. Bids 8/8. CD 7/28. 321 mi. rural distr. lines, Campbell, Crook and Weston Counties, to R. M. Campsey Constr. Co., 2520 Leyden St., Denver, Colo., $359,000. Bids 8/8. CD 7/28.

Wyo., Yellowstone Park—MUSEUM, etc.—National Park Service, Yellowstone Park, museum and administration bldg. at Custer Battlefield, to Boessow Constr. Co., P. O. Box 1237, Billings Mont., $97,500. D. M. Robbins & Assoc., Kilpatrick Bldg., Omaha, Neb., archts.

PROPOSED PROJECTS

WATER SUPPLY

Calif., Sierra Madre—Sierra Madre City Council, 55 W. Sierra Madre Blvd., addnl. water supply, incl. 11,000 ft. pipe line, $180,000. Quinton Engineers Ltd., 816 Wilcox St., Los Angeles, consult. engr.

Ill., Arlington Heights—City, WW addn. $200,000. Consoer, Townsend & Assocs., 351 E. Ohio St., Chicago, Zone 11, consult. engrs. CD 11/23/45.

▲ Ill., Bloomington—City, City Hall, addnl. water reservoir, auxiliary pipe lines from Lake Bloomington to city, auxiliary storage tanks, meter maint. etc., $1,123,000. Alvord, Burdick & Howson, 20 N. Wacker St., Chicago, Ill., consult. engrs.

Ill., Lover Park (P. O. Rockford)—City, municipal water sys., $650,000.

▲ Miss., Jackson—City, voted bonds, WW, improvs. $1,000,000. CD 7/20.

▲ Miss., Pascagoula—City, voted bonds WW, and sanitary sewer, improvs. $1,250,000. CD 7/20.

N. D., Minot—City, imprv. water sys. $800,000. Pfeifer & Schultz, Wesley Temple Bldg., Minneapolis, Minn., consult. engrs. CD n/a.

Tex., Aransas Pass—City, voted bonds Aug. 5, rehabilitating WW, $100,000; and water supply and new sys. expansion, etc., $225,000. Gordon Copenhaver, Aransas Pass, city engr. CD 7/24.

Tex., Rosenberg—City, voted bonds 60,000 lin. ft. c. i. water lines, $170,000; 300,000 gal. elevated steel tank and tower, incl. pump unit, $60,000. S. A. Russell, city engr. CD 7/11.

▲ Va., Roanoke—City, Municipal Bldg., bond election Nov. 7, exten. water sys. and buying out privately owned companies, $4,000,000. CD 9/6/45.

Wis., Eau Claire—City, City Hall, water sys., incl. collecting, storing, and distr. facilities, $100,000. Consoer, Townsend & Assoc., 557 Paw Paw Ave., Benton Harbor, consult. engrs. 2/8/45.

SEWERS, WASTE DISPOSAL

Calif., Los Angeles—Bd. Supervs. Los Angeles Co., 501 Hall of Records, sanitary sewers, Osage Ave., Los Angeles, $143,600; Arrington Ave., Rivera, $84,900. C. E. Arnold, c/o owner, co. engr.

▲ Calif., Santa Ana—Orange County Joint Outfall Dist., $3,405,000 bond election Sept. 18, Magnolia Cannery Sewer Disposal Trunk Line, incl. seven cities: Anaheim, Fullerton, Orange, Placentia, Garden Grove, La Habra, Buena Park. Koebig & Koebig, Rowan Bldg., Los Angeles, engrs.

Idaho, Nampa—City, City Hall, sewer sys. in southern portion of city in Sewer Dist. No. 40, $450,000. O. H. Griffith, city engr. CD 3/9.

Ill., Galena—City, sewerage facilities, $229,450.

Ind., Gas City—Town, Town Hall, sewerage sys., disposal plant, $250,000. Clyde Williams & Assoc., South Bend, engrs.

▲ Miss., Gulfport—City, bond election Aug. 22, and sanitary sewer and WW imprvs., $2,500,000. CD 3/21.

▲ Miss., Jackson—City, voted bonds sanitary sewer imprvs., $2,000,000. CD 7/20.

Mo., Fulton—City, City Hall, voted $195,000 bonds, sewerage sys. imprvs., incl. sewage plant with auxiliaries, appurtenances. CD 7/17.

N. J. Burlington—City, installing secondary treatment in 20-year old sewer plant enlarging local plant, $500,000. Robert Shaw, State Dpt. Health, Trenton, consult. engr.

▲ N. D., Minot—City, imprv. sewerage sys., $1,000,000. Pfeifer & Schultz, Wesley Temple Bldg., Minneapolis, Minn., consult. engrs.

Okla., Claremore—City, sewage disposal plant, $100,000. CD 3/7/46.

Okla., Sapulpa—City, sewage disposal plant, $100,000. John J. Burroughs, Sapulpa, engr.

Tex., Aransas Pass—City, voted bonds Aug. 5, sanitary sewers, $225,000; storm sewers, $125,000. Gordon Copenhaver, Aransas Pass, engr.

Tex., Houston—Harry H. Brockstein, 1104 Scanlan Bldg., sanitary and storm sewers, Riverside Terrace Annex, $105,000. Chas. W. Atkinson, 3120 Montrose Blvd., consult. engr.

Tex., Lubbock—City, City Hall, storm sewers, $500,000. G. K. Harris, Lubbock, city engr. CD 11/25/49.

Tex., Rosenberg—City, voted bonds sanitary sewer sys., incl. new lines, etc., $71,000; disposal plant imprvs., expans., $131,000; sewage lift station, $59,000. CD 7/11.

Va., Hopewell—City, sanitary sewer imprvs. Proj. No. 44-P-1016, $660,000. R. Stuart Rover & Assoc., Virginia Bldg., Richmond, consult. engr.

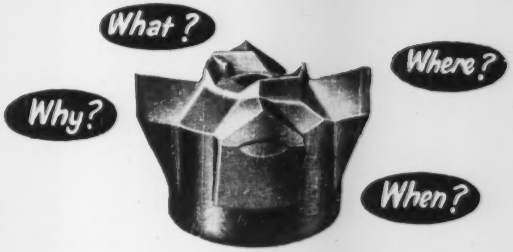
Va., Luray—Town, sanitary sewer imprvs., Proj. No. 44-P-1001, $157,000. R. Stuart Rover & Assocs., Virginia Bldg., Richmond, consult. engrs.

Va., Suffolk—City, sanitary sewer imprvs., Proj. 44-P-1019, $542,000. Myron A. Sturgeon, 2115 Kimball Terrace, Norfolk, consult. engr.

Wash., Kennewick—City, City Hall, sewage treatment plant, $250,000. N. W. Haner, Corbett Bldg., Portland, Ore., consult. engr.

Wash., Longview—City, City Hall, trunk sewers, laterals in 15 Ave. and Ocean Beach Dist., $59,200; trunks and laterals east of 32 Ave., $205,900; trunks and laterals west of 30 Ave. and north of Beech Dr. and Olive Way, $314,900; replacing 2 pump stations, $60,000. J. W. Cunningham & Assoc., Spalding Bldg., Portland, Ore., engrs.

LIDDICOAT



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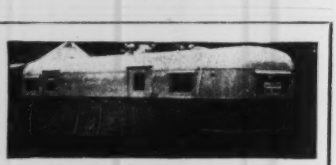

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W. Va., Barboursville—Town, sanitary sewer improvs., Proj. 46-P-1001, $223,000. The Chester Engineers, 210 E. Parkway St., Pittsburgh, Pa., consult. engrs.

W. Va., Buckhannon—City, improvs. sanitary sewers, Proj. 46-P-1025, $432,000. J. H. Milam, Dunbar, consult. engr.

W. Va., Elkins—City, sanitary sewer improvs., Proj. 46-P-1022, $730,000. J. E. Settle, Payne Bldg., Charleston, consult. engr.

▲ W. Va., Huntington—City, sanitary sewer improvs., Proj. 46-P-1002, $3,934,000 and Proj. 46-P-1024, $1,416,500. The Chester Engineers, 210 E. Parkway St., Pittsburgh, Pa., consult. engrs. CD 11/22/44.

W. Va., Mullens—City, sanitary sewer improvs., Proj. 46-P-1023, $150,000. W. D. Kelley, Chamber of Commerce Bldg., Charleston, consult. engr.

W. Va., St. Albans—City, sewage treatment plant Proj. 46-P-1031, $750,000. W. D. Kelley, Chamber of Commerce Bldg., Charleston, consult. engr.

W. Va., Weirton—City, sanitary sewer improvs., Proj. 46-P-1003, $380,500. Alden E. Stilson & Assoc., 209 S. High St., Columbus, O., consult. engrs.

Ont., Trenton—Town, sewerage works, incl. disposal plant, 3 pump stations, sanitary and storm sewers. Approx. $726,950.

Que., Lachine—City, R. Laberge, city controller, plans by J. W. Beauchamp, 82 Notre Dame St. W., Montreal, 3 pumping stations and sewer collector etc., Approx. $200,000. Gohier & Dorais, 10 St. James St. E., Montreal, engrs.

BRIDGES

Que., Quebec City—Municipality, tunnel under Dauphine St. to join Dufferin St. near Legislative Buildings, $693,200. Ed Hamel, City Hall, city engr.

STREETS AND ROADS

Mo., Kansas City—City, c/o Park Bd., c/o R. Carter Tucker, pres., City Hall, plans by Hare & Hare, 1241 W. 10, Zone 6, New Volker Blvd., Brush Creek Blvd., 47 St. Parkway, from Oak St. to Rockhill Rd., a part of cultural center park w/d'm, 47 Rockhill Rd. to Troost. $300,000.

▲ Oklahoma—State Hy. Dpt., Capitol, Oklahoma City.
Canadian Co.—c. conc. 6 mi. 4-lane on U. S. 66 between Yukon and Banner. $1,300,000. S. K. McClelland, c/o owner, engr.

Oklahoma—State Hy. Dpt., Capitol, Oklahoma City.
Leflore Co.—grading, drainage Hy. 87 east from Talihina to the Arkansas State Line. $138,500. S. K. McClelland, state hy. engr.

Okla., Ada—City, defeated bonds, access highway, $200,000. R. W. Delaney, Ada, engr.

Tex., Houston—D. D. Hutchinson & Assoc., 6317 Long Drive, concrete type street paving incls. curbs and gutters, $100,000. Tom Heaney, 2123 State St., engr.

Wash., Seattle—City, County-City Bldg., Zone 4, grading 47 Ave. and North streets, $169,954; paving Hanford St., $32,924; paving alley in Block 7, Greenlake Reservoir addn., $40,996. R. W. Finke, Seattle, city engr.

Que., Montreal—Municipality, paving MacDonald, Orleans and Courtrai Aves., $211,200; c. conc. sidewalks, Hamel Ave., St. Hibert St., MacDonald Ave., Beaugrand St., Courtrai Ave., $51,900. H. A. Gibeau, City Hall, city engr.

EARTHWORK, WATERWAYS

▲ Tex., Bay City—Matagorda Co., Bay City, defeated $2,754,000 bonds, drainage proj. CD 7/13.

AIRPORTS

▲ Tex., Houston—AIRPORT IMPRVS.—City, City Hall, municipal airport, site work, incl. parking area, approach driveways, lighting, draining, etc., $2,217,908. Wyatt C. Hedrick, 5201 Fannin St., consult. engr. CD 7/31/46.

Tex., McAllen—AIRPORT—City, voted $75,000 bonds, airport, $150,000. Jas. V. Earnutte, 1622 Transit Tower, San Antonio, engr.

LATIN AMERICA

Trinidad—Port of Spain—Colonial Development Corp., London, England, plans concentrating orange juice plant, $300,000.

Uruguay—Montevideo—Republic of Uruguay (Dpt. Interior, Montevideo), plans water distr. sys. at Chamizo, Cardona y Florencio Sanchez-Intuzzingo, Durazno-Tomas Gomensoro and Las Piedras. Approx. $350,000; storage tanks, pipe distr. sys. and water-pumping sys. at Cluy, Velazquez, San Antonio, Bella Union and Gon., $380,000.

PUBLIC BUILDINGS

▲ Ala., Anniston—HOUSING—Anniston Housing Auth., c/o Richard S. Holmes, archt., Anniston, 410 housing units for whites, $2,000,000.

▲ Ala., Birmingham—HOUSING—Birmingham Housing Auth., c/o Charles H. McCauley, archts., Jackson Bldg., Georgia Road-Gate City, White housing, 500 units; east of Elmwood Cemetery and A. G. S. R. R. colored housing. Approx. $2,000,000 each. CD 3/21

Ala., Roanoke—HOSPITAL—Roanoke Co., plans by Chas. H. McCauley, Jackson Bldg., Birmingham, hospital, $425,000.

▲ Calif., Eureka—HOSPITAL—City, City Hall, plans by Frank T. Georgeson, 355 Stockton St., San Francisco, 4 story, 75-bed, reim.-con. Eureka General Hospital addn., laundry and power plant addn. $1,200,000.

Calif., Inglewood—Hospital—Centinela Valley Community Hospital, 935 S. Flower St., plans by Walker Kirounes, Klingerman, 488 S. San Vicente Blvd., 2 story, reim.-con. hospital addn. $823,338.

Calif., Santa Rosa—HOSPITAL—Sonoma Co., Courthouse, plans by Douglas D. Stone & Lou Mulley, 619 California St., San Francisco, (1st unit) 152-bed chronic patient wing County Hospital addn. $800,000. CD 4/7/45.

Calif., Sonora—HALL OF RECORDS—Tuolumne Co. Court House, plans by Wm. Mooser, 251 Kearny St., San Francisco, Hall of Records Bldg. $400,000. CD 11/7/44.

Conn., Plainville—AUDITORIUM, etc.—Town, Bd. Educ., Town Hall, plans by Wm. J. Provost, 411 Main St., Stamford, combination auditorium and gymnasium, library and cafeteria. $400,000. CD 6/11/46.

Conn., Torrington—SCHOOL—City, Bd. Educ., 1 story masonry school. $600,000. Ernest A. Sibley, 7 S. Main St., West Hartford, archt. CD 8/6/47.

▲ Conn., Waterbury—SCHOOL—State, R. S. Thatcher, State Capitol Hartford plans by Carl J. Malmfeldt & Assoc., 36 Pearl St., Hartford, vocational technical school. $1,000,000.

▲ Fla., Jacksonville—SCHOOLS, etc.—Duval Co. Bd. Educ. 605 Ocean St., Zone 2, plans by Clyde Harris, 801 Mary St., Zone 7, combination auditorium and gymnasium for Matthew W. Gilbert School in W. Springfield, $256,600; plans by D. Floyd Rosser, 1025 Mary St., Zone 7, Matthew W. Gilbert School addn. in West Springfield, $264,100; plans by Lee Roy Sherrill, Clark Bldg., Zone 2, school at Oceanway $313,500; plans by Clyde Harris & Douglass Anderson, 801 Mary St., Zone 7, school, $250,350. CD 10/10.

▲ Fla., Orlando—CITY HALL—City, plans by Richard Boone Rogers, Orlando, city hall, $1,000,000. CD 9/26/43.

▲ Ill., Dundee—SCHOOLS—School Dist. 300, Dundee, plans by Bradley & Bradley, 22650 S. Main St., Rockford, 8 schools, $1,250,000.

Kan., Larned—SCHOOLS—Bd. Educ., J. O. Cullison, supt., Larned City Schools, plans by Thomas Williamson & Co., National Bank of Topeka Bldg., Topeka, high school, $450,000, elementary school, $250,000. CD 7/14.

Ky., Bowling Green—STUDENT UNION—Commonwealth of Ky., New State Office Bldg., Frankfort, plans by John F. Wilson, 508 E. Main St., Lexington 2 story, bsmnt., 102x152 ft. student union bldg. for Western State College. $600,000. J. M. Ingram, 419 W. Main St., Louisville, consult. engr. J. B. Rieman, New State Office Bldg., Frankfort, owner's staff engr. CD 10/20/48.

▲ Ky., Maysville—HOUSING—Maysville Municipal Housing Comn., Maysville, plans by Gillig Watson & Wilson, 1452 High St., Lexington, 100 unit housing, $1,500,000.

▲ La., New Orleans—SCHOOL—Louisiana State University, Baton Rouge, plans by Andry & Feitel, Caronidelet Bldg., Benson & Riehl, Canal Bldg., August Perez & Assoc. Audubon Bldg., Louisiana State University Medical School, $2,000,000. CD 6/26.

▲† Md., Annapolis—HOUSING—Pub. Wks. Office, Seventh River Naval Command, Annapolis, plans by Shreve Walker & Assoc., 600 Woodward St., Detroit, Mich., 2 story, bsmnt., brick frame, 400 family unit garden apartments. $4,000,000.

Mass., New Bedford—SCHOOL—New Bedford Vocational School, 415 Ash, plans by Erford W. Poole, 4 Chapman Bldg., 2 story, brick vocational school addn. $400,000.

Mich., Detroit—SCHOOL—City, Bd. Educ., 1214 Griswold St., plans by Malcomson, Fowler & Hammond, 1217 Griswold St., 3 story, brick, steel Wilbur Wright trade School addn. $750,000.

Mich., West Bloomfield—SCHOOL—West Bloomfield School Dist. plans by George D. Mason & Co., 409 Griswold St., Detroit, 2 story, bsmnt., brick, steel, 20 classroom high school, Keego Harbor. $525,000.

Miss., Jackson—LIBRARY—City, voted bonds, library, $600,000. CD 5/19.

▲ Miss., Jackson—SCHOOL—City, voted bonds, school improvs., $8,500,000. CD 7/20.

Miss., Jackson—MUNICIPAL COURT—City, voted bonds, municipal court bldg., $500,000.

▲ N. J., Irvington—SCHOOLS—Bd. Educ., Irvington, Berkeley Terrace School addn., $400,000; high school bldg. addn., $1,600,000; Myrtle Ave. Junior High School addn. $900,000; Union Avenue Grammar School conversion and Junior High School addns., $500,000. CD 3/3/48.

N. J., Wyckoff—SCHOOLS—Bd. Educ., Wyckoff, plans by Lee & Hewitt, Wyckoff addns. to Coolidge and Washington Schools, $441,000.

O., Swanton—SCHOOL—Bd. Educ., Swanton, bond election Nov. 7, school, $339,000.

O., Vandalia—SCHOOL—Bd. Educ., Butler Twp., School Dist. Vandalia, bond election Sept. 29, school, $495,000.

▲ Okla., Tulsa—SCHOOL BUILDINGS—Bd. Educ., Tulsa, addnl. school bldgs. $2,000,000. CD 11/12/45.

▲ Tex., El Paso—INSTITUTE—El Paso Independent School Dist., El Paso, plans by Carroll & Daeuble, 11001 Vanwell Blvd., Unit 3 of Technological Institute $250,000; addnl. units of Technological Institute $750,000.

▲ Tex., Luling — HOUSING — Luling Housing Auth., Luling, plans by John Linn Scott, Nalle Bldg. Annex, Austin, 159 unit low cost housing, $750,000. CD 3/30; 75 low rental housing units, $325,000. The Marvin Turner Engineers, Nalle Bldg. Annex, Austin, consult. engrs. CD 5/3.

▲ Tex., McAllen—HOSPITAL—City, voted $500,000 bonds, hospital. $1,000,000. CD 6/3.

Tex., Pharr—SCHOOL—Pharr-San Juan-Alamo School Dist., c/o L. Stinnett, Pharr, bond election Aug. 29, 20 room school, Pharr, $325,000, 38 room school rooms and 5 cafeterias at San Juan and Alamo, $275,000.

Tex., Schulenburg — SCHOOL — Schulenburg Independent School Dist., Schulenburg, cancelled bond election to have been held July 8, school, $250,000. CD 6/30.

Tex., Wharton—SCHOOL—Wharton Independent School Dist., Wharton, voted bonds July 29, school, $415,000. Claude H. Lindsley, 5008 Almeda Rd., Houston, archt. CD 7/27.

▲ Tex., Ysleta—SCHOOLS—Ysleta Independent School Dist., plans by Carroll & Daeuble, 1001 Yandell Blvd., El Paso, Ascarate School, $275,000, grade school $250,000, North Loop School, $275,000; Cadwallader School, $250,600; plans by Percy McChee, First National Bank Bldg., El Paso, high school, $250,000. CD 2/16.

▲ Va., Lynchburg—HOSPITAL—Lynchburg Hospital Auth., Lynchburg, plans by Samuel E. Harnaford & Sons, 1024 Dixie Terminal Bldg., hospital. $1,750,000.

▲ Va., Richmond—PRODUCE MARKET—Richmond Produce Market Auth., c/o Carneal & Johnson, Atlantic Life Bldg., Richmond, wholesale produce market, Proj. 44-P-1020. $1,000,000.

Wash., Quincy—SCHOOL—Bd. plans by W. H. Rothe, Yakima, school. $421,000. CD 9/26.

Wash., Raymond—SCHOOL—School Bd., Raymond, bond election Sept. 12, school. $400,000.

▲ Wis., Milwaukee—SCHOOLS—Bd. School Directors, 1111 N. 10 St., Zone 3, plans by G. E. Wiley, c/o owner, Allen-Field School, $1,250,000; 32 St. and Morgan Ave. School, $450,000; Center-Pierce St. School, $1,250,000.

Ont., Markham—SCHOOL—School Bd., Stouffville, high school. $500,000.

Ont., Port Arthur or Fort William—HOME—Thunder Bay District Bd. Management for Home for the Aged, H. Waugh, Shuniah Twp., secy., home for the aged. Approx. $450,000.

Que., Arvida—SCHOOL—School Comm., Y. Morrier, secy., 20 room school on Moritz St. to be named St. Patrick School. $450,000.

COMMERCIAL BUILDINGS

▲ Calif., Oxnard—HOSPITAL—St. John's Hospital, 303 N. F. St., plans by Maguolo & Quick, 4908 Delmar Blvd., St. Louis, Mo., and Frank T. Georgeson, 355 Stockton St., San Francisco, 2 story 75-bed rein.-con. Type I, St. John's Hospital addn., $1,000,000. Ellison & King, 1045 Sansome St., San Francisco, engrs. CD 1/26/49.

▲ Calif., San Jose — HOSPITAL — Sisters of Charity (Daughters of Charity of St. Vincent de Paul) c/o Maguolo & Quick, archts., 4908 Delmar Blvd., St. Louis 8, Mo., and Frank T. Georgeson, 355 Stockton St., San Francisco, 5 story, bsmnt., type I rein.-con. 250-bed hospital, nurses home, O'Connor Hospital site, $4,000,000. Ellison & King, 1045 Sansome St., San Francisco, consult. engrs. CD 5/24/48.

Fla., Fort Lauderdale — RECREATION CENTER — Fort Lauderdale Hi-Li Fronton, c/o Robert Law Weed, archt., Dupont Bldg., Miami, recreation center, $550,000.

Ga., Macon—DEPARTMENT STORE—F. W. Woolworth Co., Woolworth Bldg., New York, N. Y., department store. $500,000.

Ill., Niles—SHOPPING CENTER—Arthur Weller, Pfingston Rd., North Brook, plans by Michaelsen Rabig & Ramp, 325e. W. Franklin St., Chicago, Zone 24, shopping center, Touhy, Caldwell and Gros Pointe Rd. $750,000.

Ill., Skokie — SHOPPING CENTER — Marshall Field & Co., State St., Chicago, shopping center, incl. 1,000,000 sq. ft. store space incl. bank, theater, 70 other stores and 6,000 car parking lot, Cicero Ave. (U. S. Route 41) and Golf Rd.

▲ La., New Orleans—APARTMENT—Winchester Apartments, c/o Shourds & Magagbab, archts., Audubon Bldg., apartment. $1,000,000.

Mich., Wyandotte—STORE—J. Cinnamon, Wyandotte, plans by Arthur O. A. Schmidt, 1118 Buhl Bldg., Detroit, 3 story, bsmnt., 100x225 ft., brick, steel retail store, Main St. $800,000.

▲ Miss., Vicksburg—HOSPITAL—Sisters of Mercy, c/o archt., plans by Raymond Birchett, 2914 N. State St., Jackson, hospital. $2,500,000.

N. Y., Forest Hills—DWELLINGS—Midtown Apartments, Inc., c/o O. Silverstone, archt., 153 Pierrepont St., Brooklyn, 6 story, 75x150 ft. multiple dwellings, 71 Rd. and W. 110 St. $500,000.

N. Y., New York—APARTMENT—North Road Constr. Corp., 16 Court St., Brooklyn, plans by H. I. Feldman, 415 Lexington Ave., New York, 6 story apartment, Pelham Parkway and Cruger Ave. $500,000.

N. Y., Ridgewood—SCHOOL—St. Pancreas Church, 68 St. and Myrtle Ave., school. $600,000.

N. Y., Westbury—DWELLINGS—Phillip Levin, c/o Feldhaus & Engel, archts., 2 Woodfield Rd., West Hempstead, fifty ranch-style dwellings to be known as Hicksbury Homes, Old Country Rd. east of Post Ave. $442,500.

O., Cincinnati—DORMITORY, etc.—Bethesda Hospital Assoc., A. M. McGinnis, bus. mgr., Oak St. and Reading Rd., revised plans by Samuel Hannaford & Sons, 1024 Dixie Terminal Bldg., 5 story, bsmnt., rein.-con. nurses dormitory and training bldg. $800,000. Fosdick & Hilmer, 1703 Union Trust Bldg., 40 E. 4 St., consult. engrs. (electric, heating, plumbing and ventilation). CD 12/19/46.

O., Toledo—COMMUNITY CENTER—Jewish Community Center, 1900 Linwood Ave., Zone 2, plans by Leon Spector, architectural dir., National Jewish Welfare Bd., New York, N. Y., community center, Collingwood Blvd. and Virginia St. $700,000.

Okla., Spavinaw—HOTEL—Spavinaw Hotel Co., Spavinaw, plans by A. J. Love, Spavinaw, 140 room hotel. $400,000.

Pa., Easton—SUPER MARKET—Baltimore Markets, 2301 Walnut St., Phila., plans by Ezekiel Levinson, 908 Chestnut St., Phila., super market. $400,000.

Tex., Austin—OFFICE—F. D. Glass, Jr., c/o Giesecke, Kluehne & Brooks, archts., 121 E. 6 St., 7 story, bsmnt., brick, stone, concrete, steel frame office with 4 story alternate, air-conditioning, 9 and Brazos Sts. $750,000.

▲ Tex., Bellaire—BANK, etc.—Bellaire State Bank, Bellaire, plans by Herman Lloyd, 4605 Montrose St., Houston, 12 story, bsmnt., 140,000 sq. ft. brick veneer bank and office, concrete pier and beam fdn. $2,000,000.

▲ Tex., Fort Worth—DWELLINGS—Taylor-Todd Corp., First National Bank Bldg., plans by Easterwood & Easterwood, 404 Bewley Bldg., 1000 dwellings near Quartermaster Depot, $6,000,000.

Tex., Fort Worth—RESIDENCES—Worth Builders, Inc., 603 First National Bank Bldg., 75 brick residences, South Port Addn. $400,000.

Tex., Houston—DWELLINGS—W. P. Hazelwood, 639 Long Dr., 50 dwellings in area of Oak Meadows addn., $475,000.

Tex., Houston—DWELLINGS—W. S. Langston, 509 Vince Rd., 40 dwellings in area of Oak Meadows addn. $400,000.

Tex., Houston—HOUSING—Palmer & Robinson, 6319 Long Dr., housing in area of Oak Meadows addn., Approx. $500,000.

▲ Tex., San Antonio—DWELLINGS—Jackson Terrace, Inc., 3219 West Ave., 52 frame dwellings, Vance-Jackson Rd., at Landa Rd. $480,000; 91 addnl. frame dwellings, off Vance Jackson Rd., area Landa Rd., $728,000.

Wash., Tonasket—HOSPITAL—Tonasket Hospital Assn., Tonasket hospital. $485,000.

▲ Alta., Jasper Place (Postal Dist., Edmonton)—HOUSING—E. Edward Litchfield, c/o F. W. Broadstock, Jasper Place, 1,1250 unit community housing. $8,400,000.

▲ Que., Montreal—HOME—Glendale Convalescent Home, Inc., 3540 Mountain St., H. W. Watt, chn., plans by Geo. Shubin, 1415 St. Mark St. 6 story, bsmnt., 50x300 ft., rein.-con., brick, stone convalescent home, Cote de Liesse Rd. west of Orphanage. Approx $1,000,000.

▲ Que., Ste Agathe—HOSPITAL—Royal Edward Hospital, 3674 St. Urbain St., Montreal, plans by McGougall & Assoc., 1235 McGill College Ave., Montreal, 200 bed hospital addn. $1,500,000. CD 3/27/47.

INDUSTRIAL BUILDINGS

▲ Ill., Cicero—FACTORY—Goss Printing Press Co., 31 and Central Sts., plans by Olsen & Urbain, 5 S. Wabash St., Chicago, Zone 3, 400,000 sq. ft. factory. $2,750,000.

Kan., Welda—COMPRESSOR UNIT—Cities Service Gas Co., First National Bldg., Oklahoma City, Okla., 3,000 hp. compressor addn. and appurtenant facilities, North Welda. $600,000.

▲ Ky., Owensboro—PLANT—General Electric Co., River Rd., Schenectady, N. Y., 117,000 sq. ft. radio and television receiving tube plant addn. $2,000,000.

▲ Ky., Louisville—WAREHOUSES, etc.—Louisville Produce Market, Inc., Geo. F. Kinhead, pres., 315 Tyler Bldg., warehouses, concrete drives and parking area. $1,000,000.

▲ Ky., Owensboro—FACTORY—General Electric Co., L. B. Davis, mgr., Owensboro, plans by Marr & Holman, Stahlman Bldg., Nashville, Tenn., enlargement and addns. for radio tube factory. $2,000,000. CD 8/9.

N. J., Teterboro—WAREHOUSE—Burlington Mills Corp., 350 Fifth Ave., New York, N. Y., large distributing warehouse 1 story high, 240,000 sq. ft., service addn. in addn. to 2 story section 15,000 sq. ft., containing air conditioned offices and cafeteria, on 22 acre site, North St.

O., Sidney—PLANT—Monarch Machine Tool Co., J. A. Raterman, pres., Sidney, replacing approx. 30,000 sq. ft. old plant with new plant, incl. 12,000 sq. ft. plant addn., incl. equip. $500,000.

Okla., Enid—GRAIN ELEVATOR—Union Equity Co-operative, Enid, grain elevator addn. $900,000. Horner & Wyatt, Dwight Bldg., Kansas City, Mo., consult. engrs.

▲ Pa., Altoona—PLANT—National Radiator Co., Montague and Crouse Sts., Johnstown, 1 story, mill type plant on 15 acre site, near here. $1,000,000.

Tex., Houston—INDUSTRIAL—Crow-Flite Oil Co., c/o E. P. Crow, 340 W. 26 St., masonry type industrial bldg. $250,000.

Tex., Houston—PLANT—Abe Kauffman, 2026 Portsmouth St., plans by Irving R. Klein & Assoc., 1317 Austin St., 2 story, 78x125 ft., steel, brick, hollow tile cleaning and dyeing plant. $150,000.

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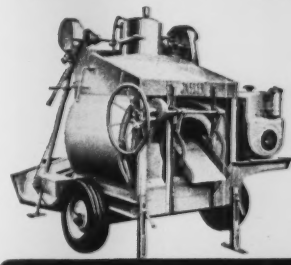

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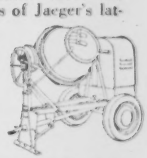

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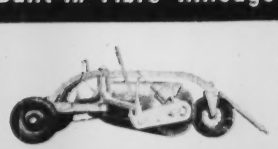

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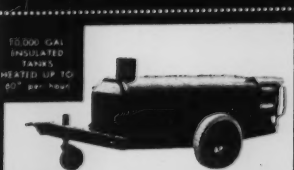

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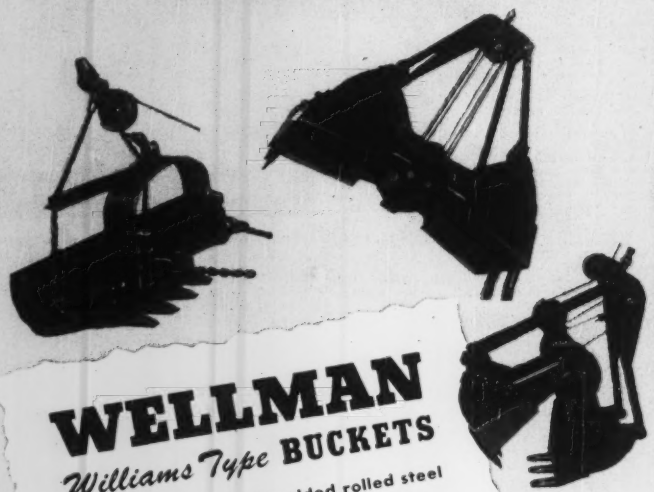

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Alaska, Anchorage—PLANT—Anchorage Sand & Gravel Co., Anchorage, haydite plant, $250,000.

▲ B. C., Vancouver—BREWERY—Sicks Breweries Ltd., Regina, Sask., brewery at end of Burrard St. Bridge, $2,500,000.

Man., St. James—DEPOT—Ford Motor Co. of Canada Ltd., St. James, 1 story, brick, concrete, structural steel, 75,800 sq. ft. floor space, service parts depot on 19 acre site Ellice Ave., $900,000.

▲ N. B., St. John—PLANT—Syndicate, c/o J. W. Hill, General Development Co. of America Ltd., 61 Broadway, New York, N. Y., cement plant, $1,000,000.

Newfoundland, Corner Brook—PLANT—Syndicate, c/o Hon. Mr. Smallwood, St. John's, cement plant, $500,000.

UNCLASSIFIED

Ala., Huntsville—ELECTRIC SYSTEM IMPRVS.—City, electric sys. imprvs., $296,000.

▲ Ill., Bloomington—ELECTRICAL SYSTEM—City, City Hall, general imprvs., extens. municipal electrical sys., $3,816,000. Alvord, Burdick & Howson, 20 W. Wacker St., Chicago, consult. engrs.

Kansas—RURAL DISTRIBUTION LINES—Jewell-Mitchell Electric Co-operative, Mankato, rural distr. lines in Jewell, Mitchell and Lincoln Counties, $800,000. Raymond H. Reed & Co., Columbus, Neb., consult. engrs.

Kan., Liberal—SWIMMING POOL—City, swimming pool, $125,000. H. R. Hunter, Derby Bldg., Wichita, consult. engr. CD 7/27.

▲ La., Baton Rouge—STADIUM—Louisiana State University, Baton Rouge, plans by Smith & Padgett, Monroe, enlarging Tiger Stadium, $1,500,000. Geo. P. Rice, Audubon Bldg., New Orleans, consult. engr. CD 6/26.

Missouri—RURAL DISTRIBUTION LINES—Intercounty Electric Co-operative Assn., Licking, 268 mi. rural distr. lines to serve 716 rural consumers, two-way radio communication sys., headquarters facilities and sys. imprvs., Mo. 18 U Texas, $600,000.

Missouri—RURAL DISTRIBUTION LINES—Ozark Border Electric Co-operative, P. G. Winge, pres., Fifth and Poplar Sts., Poplar Bluffs, 244 mi. rural distr. lines in Carter, Ripley, Wayne, Reynolds and Shannon Counties, being W. section of co-operative electric sys., $740,000. Swindell Eng. Co., Main and Cedar Sts., Poplar Bluff, consult. engr. CD 7/27.

Ohio—GAS PIPE LINES—Ohio Fuel Gas Co., 99 N. Front St., Columbus, 22 mi. 16 in. natural gas pipe line in Dayton area, from junction of 2 lines near Centerville to north junction near Englewood, etc., $781,000.

Okla., Norman—PARK IMPRVS.—City, bond election Sept. 26, park imprvs., $100,000. E. H. Durkee, c/o owner, engr.

Tex., Devine—GAS DISTRIBUTION SYS.—City, voted bonds Aug. 5, gas distr. sys., transmission lines, $125,000. Alamo City Engineers, 3005 Transit Tower, San Antonio, consult. engrs. CD 7/27.

Tex., Houston—UNDERGROUND PIPE LINE—Houston Oxygen Co., 5621 Clinton Dr., constr. underground pipe network sys. to pipe oxygen into industrial plant, $100,000.

Tex., Lubbock—PLAYGROUNDS, etc.—City, City Hall, playgrounds, 2 rein.-con. outdoor swimming pools $205,000. C. K. Harris, Lubbock, city engr.

Tex., Lubbock—PARK IMPRVS.—City, City Hall, imprv. parks, $150,000.

▲ Tex., Lubbock—STREET LIGHTING—City, City Hall, electric street lighting sys. extens., $233,650; new 12,500 kwh generating unit, $1,208,000. C. K. Harris, Lubbock, city engr.

Wash., Spokane—MOTEL, etc.—L. E. Williams, Garland Ave., motel, service station and restaurant at Geiger Field, $250,000.

Ont., Toronto—CATTLE BUILDING—Canadian National Exhibition, Toronto, remodeling cattle bldg. at Exhibition Park, $630,000.

Que., Limoilou (Postal Dist. Quebec City)—PLAYGROUND—Municipality, playground, 2 swimming pools, 4 tennis courts, rink, etc., $100,000. Ed. Hamel, City Hall, Quebec City, engr.

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CONSTRUCTION REPORTS–Second Section

WATER SUPPLY

BIDS ASKED

N. J., New Lisbon—B.A. 8/29—State Div. Purchase & Property, State House, Trenton, water lines at State Colony, $28,000.

O., Salem—B.A. 8/29—Water Comm., at office WW Supt., City Hall, WW improv., incl. Contr. 4, East Cold Run Reservoir, appurtenances; Contr. 5, 20 in. water transmission main, Sect. II; Contr. 6, standpipe foundations piping; Contr. 7, 500,000 gal. steel standpipe. Plans deposit $10 each. Chester Engineers, 219 E. Park Way, Pittsburgh 12, Pa., engrs.

Pa., Somerset—B.A. 8/30—General State Auth., 18 & Herr Sts., Harrisburg, water supply and distr. sys., Somerset State Hospital, $240,000. Plans deposit $10 each contract. Capital Eng. Corp., Dillsburg, engr.

Tex., Daingerfield—B.A. 8/31—City, water lines, $30,300. Wyatt C. Hedrick, 904 Fort Worth Ave., Dallas, engr.

Ia., Spencer—B.A. 9/1—City, Bd. Trustees Spencer, pumo. station addn., steel water storage reservoir, $100,000. CD 5/28/45.

Va., Harrisonburg—B.A. 9/1—At office G. Tyler Miller, pres., Madison College, constr. steam and hot water distr. sys. improv. at Madison College, $25,000. Plans deposit $10. Wiley & Wilson, 517 American Bldg., Richmond, engrs.

LOW BIDDERS

▲ **Tex., Dallas**—City, City Hall, Aug. 15: filter house near Carrollton, from J. C. Williams, Inc., 7903 Manderville Lane, Dallas, $1,629,000. Est. $1,500,000. CD 7/13.

Tex., Midland—City, City Hall, Aug. 3, c.i. water and sewer pipe from U. S. Pipe Co., Praetorian Bldg., Dallas, $602,407. CD 6/29.

CONTRACTS AWARDED

Fla., Lake City—City, modernizing, expanding WW sys., to J. W. Meadows & Co., 1306 Hollywood Ave., Jacksonville, Zone 5, $100,998. Bids 7/28, awarded 8/8. CD 7/10.

SEWERS, WASTE DISPOSAL

BIDS ASKED

Minn., Virginia—B.A. 8/29—City, J. G. Milroy, Jr. clk., sewage disposal plant, $400,000. Plans deposit $25. Toltz, King & Day, 1509 Pioneer Bldg., St. Paul, engrs. CD 8/3.

Mo., St. Louis—B.A. 8/29—City, c/o Frank J. McDuff, pres., Bd. Pub. Service, 304 City Hall, 12 and Market Sts., Zone 3, repair slide on River Des Peres Drainage Works, 604 ft. from Mass. River, 3,600 cu. yds. excavation, 15,000 lin. ft. piling, 500 lin. ft. wires and cable, 2,000 tons of stone, 150 cu. yds. Class B concrete, etc., $81,000. Plans deposit $50. Guy Brown, 325 City Hall, Zone 3, ch. engr. CD 4/26.

† **New Jersey**—B.A. 8/29—U. S. Eng., 121 N. Broad St., Phila., Pa., dredging Little Egg Harbor Bay, Tuckerton, Ocean Co., Approx. $150,000. Extended date. CD 8/8.

Mich., Detroit—B. A. 8/30—Wayne Co. Drain Comm., George A. Dorman, constr., 3505 Barlum Tower, cleaning 9,520 ft. drain, Fellows Creek.

Minn., Watkins—B.A. 8/30—Village, F. J. Drey, clk., sewage treatment plant, sanitary sewer sys., incl. 14,5 lin. ft. 8- to 10-in. vitr. clay pipe, $123,000. Plans deposit $10. Bannister Engr. Co., 1549 University Ave., St. Paul, engr. CD 5/20/49.

Pa., Somerset—B.A. 8/30—General State Auth., 18 & Herr Sts., Harrisburg, constr. sewage disposal plant, Somerset State Hospital, $220,000. Plans deposit $10. Capitol Eng. Co., Dillsburg, engr. CD 2/20/48.

Tex., Daingerfield—B.A. 8/31—City, sanitary sewer extens., $50,000. Wyatt C. Hedrick, 904 Fort Worth Ave., Dallas, engr.

Tex., Fort Worth—B.A. 8/31—City, City Hall, rotary vacs. for sewage filters, contr. 2-B, floating covers for digestion tanks, incl. two 26-ft. diam. and eight 200 filters, Contr. 2-C, (Proj. 41-p-289), $100,000. Plans deposit $25. Freese & Nichols, 407 Dunciger Bldg., engrs. CD 9/22/48.

Wash., Seattle—B.A. 8/31—Lake City Sewer Dist., c/o J. W. Carey, H. W. Kramer & Assoc., engrs., 1917 First Ave., furnishing equip. for sewage treatment plant unit 1B. CD 1/26/49.

▲ **Ill., East St. Louis**—B.A. 9/1—City, East Side Levee & Sanitary Dist., East St. Louis, sanitary sewer serving city and suburban area of Lansdowne and Edgemont, $7,000,000-$11,000,000. CD 4/17.

Mich., Ludington—B.A. 9/2—City, Edward W. Larsen, city engr., City Hall, san. sewer, James Street Sewer, 3,330 ft. 60- to 72-in. sewer.

Calif., Crestline—B.A. 9/5—Crestline Sanitation Dist., Court House, San Bernardino, 67,000 ft. 8- in. vitr. clay pipe and treatment plant in district, $310,127. Plans deposit $20. Clarke Eng. Co., Anderson Bldg., San Bernardino, engr. CD 7/25.

LOW BIDDERS

Md., Baltimore—City, Bureau Sewers, 512 Municipal Bldg., Zone 2, Aug. 9, Contr. 257, 1,190 lin. ft. 24- to 36-in. reinforced pipe drain, 138 lin. ft. 15- to 18-in. vitr. pipe drain, 567 cu. yd. brick masonry, 40 lin. ft. inlets, etc., from Square Constr. Co., 115 S. Haven St., $110,874. CD 8/2.

▲ **Pa., Phila.**—Dpt. P. Wks., City Hall Annex, Aug. 4, from Peter Kiewit & Sons Co., 38 S. Dearborn St., Chicago, Ill., main gravity intercepting sewer, various locations, Contrs. A, B, C, $5,432,814***from Square Constr. Co., 115 S. Haven St., Baltimore, Md., Contr. A, $2,629,205; Contr. B, $3,152,913; Contr. C, $945,995***from Robert Lombardi, Widener Bldg., sewers Sch. B-1, various locations, $194,150. CD 7/5.

Tex., Wichita Falls—City, City Hall, Aug. 10, sewage disposal plant, from H. B. Zachry Co., Inc., Box 2570, San Antonio, $501,500. CD 7/14.

CONTRACTS AWARDED

Fla., Lake City—City, constr., exten. sewerage mains and other work on sanitary work, to Strom & White, 1226 W. Forsythe St., Jacksonville, Zone 4, $124,017. Bids 6/28, awarded 8/8.

Ore., Roseburg—City, City Hall, West Roseburg sewerage sys., 36,180 ft. 6- to 15-in. pipe, 105 manholes, 22,000 cu. yd. excav. and backfill, to Stateside Constr. Co., Securities Bldg., Seattle, Wash., $148,965. Bids 8/10. CD 7/31.

▲ **Tennessee and Virginia**—Cities of Bristol, Tenn. and Bristol, Va., sanitary sewer improvs., Div. 1, Contr. A, to Burch Constr. Co., Oak Ridge, Tenn., $671,200 ***Contr. B, to Wright Contg. Co., 504 25 Ave., Columbus, Ga., $578,900***Contr. C, to Blythe Bros., 2911 Hutchinson Ave., Charlotte, N. C., $474,900***Div. 2, Contr. A and B, to Bush Bldg. Co., 805 8 Ave. N., Nashville, $1,134,236 and $60,400 respectively. Grand total $2,919,636. CD 7/19, under LB.

Tex., Dallas—City, City Hall, exten. sanitary sewer lines to Disposal Plant (part of White Rock Sewer Proj.), to W. G. Cullum & Co., Grand National Bank Bldg., and Whittle Contg. Co., 3102 Kings Row, $500,000. Bids 8/8. CD 7/13.

▲ **Tex., Fort Worth**—City, City Hall, sewage treatment plant, Contr. 1, plant to Russ Mitchell, Inc., P. O. Box 8068, Houston, $1,640,000; Contr. 2-A, clarifier equip., to Process Engineers, Inc., 6381 Hollywood St., Los Angeles, Calif., $54,372. Bids 8/3. CD 8/8, under LB.

Wis., Eau Claire—City, storm sewers to Dan Borre, 741 Sherwood Ave., St. Paul, Minn., $135,686. W. Wolf, city engr.

BRIDGES

BIDS ASKED

STATE HIGHWAY LETTINGS

August 29	September 6
Iowa	Louisiana
September 1	September 7
Kansas	California

Md., Annapolis—B.A. 8/24—Anne Arundel Co., Court House, 90 ft. span steel and timber bridge, Dpt. P. Wks., Annapolis, engr.

Ill., Chicago—B.A. 8/31—City, City Hall, Congress St. Superhighway Underpass at New York Central R. R. and La Salle St. Station, $350,000. CD 4/4/45.

New Jersey—B.A. 9/7—New Jersey Turnpike Auth., War Memorial Bldg., Trenton.

Hudson Co.—Contr. 49, constr. substructures and superstructures Secaucus Road underpass, the Paterson Plank Road overpass, the Route 3 overpass and other incidental work. CD 7/13/49, under Streets and Roads.

† **Virginia**—B.A. 9/7—Bureau Public Roads, Dpt. Commerce, 1440 Columbia Parkway, Proj. 1D12, Plans deposit $10. H. J. Spelman, div. engr.

LOW BIDDERS

Maryland—State Rds. Comm., Baltimore, August 8, 11 span 365 ft. steel beam concrete bridge on cast-in-place concrete piles, 26 ft. roadway over Chester River on State Rte. 290, Crumpton, grav. surf. 0.22 mi. approaches, Contr. K-178-1-215, Kent and Queen Anne Counties from Metzen Contr. Co., 1301 Fidelity Bldg., Baltimore, $195,467. CD 7/14.

Washington—State Hy. Comm., Madison, Aug. 8, Canal Bridge and approaches, and Ketchum Point Overhead and approaches, Portage, Contr. 1 structures B-11-3, B-11-2 and approaches, Proj. F 035-1 (9) and FAGM 035-1 (10), S. T. Hy. 33, P. Columbia Co., from Brennan Bros., Lansing, Ia., $213,984. CD 7/19.

CONTRACTS AWARDED

▲ **Georgia**—State Hy. Dpt., Atlanta, grading, paving 3.4e mi. approaches and bridge at Little River on Lincolnton-Augusta Rd., Proj. SAP-96-1 (3), Lincoln and Columbia Counties, to E. H. Hines Constr. Co., Greenwood, S. C., and Robert Lee, Inc., Manning, S. C., $1,411,941. Bids 8/4, awarded 8/11. CD 8/11, under LB.

Maine—State Hy. Comm., Augusta, structural steel Quossoc Bridge over Rangeley River in Rangeley F. A. Secondary Proj. S-0181 (1), Franklin Co., to C. W. Bagley, Augusta, $52,166***structural steel Waverly Bridge over West Branch Sebastcook River in Pittsfield, Somerset Co., to Forest Frederick, Pittsfield, $72,227***structural steel wrought iron plate, Stockton Rd. Crossing under Bangor and Aroostook Railroad track in Prospect and Frankfort, F. A. Proj. FG-84 (14), Waldo Co., to Cyr & Denico Co., Waterville, $105,124. Bids 8/9. Grand total $229,517. CD 8/4.

Oklahoma—State Hy. Dpt., Oklahoma City, Zone 5, 3 concrete, steel bridges on State Hy. 15 west of Red Rock, Noble Co., to Moore Bridge Co., Ada, $76,254, est. $80,810***concrete, steel bridge on State Hy. 15 at Red Rock, Noble Co., to G. & T. Constr. Co., Meeker, $83,382, est. $90,256***2 concrete, steel bridges on State Hy. 48 south of Kenefic, Bryan Co., to Duard Pyle, 3404 Classen St., Oklahoma City, Zone 5, $83,087, est. $88,629*** 3 concrete, steel bridges and underpass under A. T. & S. F. Railway Co. line on the by pass route for U. S. 66 between Lincoln and Classen, Oklahoma Co., to Tex Baughman Constr. Co., 4000 N. W. 6 St., Oklahoma City, Zone 7, $341,456, est. $365,757. Grand total $584,179. Bids 8/8, awarded 8/10. CD 8/2.

STREETS AND ROADS

BIDS ASKED

STATE HIGHWAY LETTINGS

August 29	Minnesota
Iowa	September 6
Maryland	California
September 1	Louisiana
Kansas	

La., Sulphur—B.A. 9/5—City, street paving, F. Shutt's Sons, 324 Pujo St., Lake Charles, engr.

Minn., Breckenridge—B.A. 9/6—Wilkin Co., E. T. Anderson, aud., grading 7.5 mi. between T. H. 82 and 2.5 mi. west of Rothsay, 106,749 cu. yd. excav. and 13,283 cu. yd. sand-gravel fill in place, S. P. 84-501-04 (SAR 6), Minn., Proj. S 111 (4); and 2 mi. between SAR 1 and east county line, 29,567 cu. yd. excav. S. P. 84-508-02 (SAR 8), Minn. Proj. S 392 (2), $50,000. Plans deposit $2 and 90c. A. C. Chard, co. hy. engr.

Tex., Bellaire—Bids Asked—Thos W. Menefee & Assoc., Bellaire, c. conc. paved streets, off Post Oak Rd., $65,000.

Tex., San Antonio—Bids Asked—Jackson Terrace, Inc., 3219 West Ave., constr., asph. type paving streets, $70,000. J. W. Beretta Engineers, Inc., 902 Travis Bldg., engr.

LOW BIDDERS

Maryland—State Rds. Comm., Baltimore, Zone 2, Aug. 8, b. conc. wedge, leveling, base and surf. courses, 1.549 mi. Main St. from Jeffers St. to point 0.22 mi. east of Delaware Ave., 0.855 mi. North St. from Main St. to Big Elk Creek, 0.724 mi. Bridge St., from bridge over Elk River to Northern Town Limits, 0.119 mi. Delaware Ave. from Main St. to bridge over Elk River, Contr. CE 333-215, Cecil Co., from Bituminous Constr. Co., Inc., 2301 Ridgewood Ave., Baltimore, slag $68,894, stone $75,670, grav. o/s stabilized bit. conc. base, conc. surf., aggregate base, surf. 6,747 mi. State Rte. 5, beginning at State Rte. 235, approx. 2 mi. southeast of Mechanicsville, exten. southerly to Loveville, Contr. SM-291-515, St. Marys Co., from A. H. Smith, Branchville, $424,736. CD 7/27.

▲ **North Carolina and Virginia**—Coastal Turnpike Auth. (Va.) and Carolina-Virginia Coastal Highway Corp., (N. C.), c/o Wm. F. Freeman Engineers, Inc., engr., High Point, N. C., Aug. 7, constr. 22.79 mi. section hy. 13, Va. from Amey, & Webb, $145; Broad Creek Rd., Norfolk, Va., and Mt. Scott, Franklin, Va., $871,039***52.51 mi. section in N. C., from Ballenger Paving Co., Paris, Greenville, S. C., $746,983***2 bridges in Va., from Norfolk Contg., 4100 Indian River Rd., Norfolk, Va., $107,911. CD 7/21.

N. C., Charlotte—City, Aug. 13, streef impres., from Blythe Bros. Co., 2911 Hutchinson Ave., $140,456. CD 8/3.

▲ **Pennsylvania**—State Hy. Dpt., Harrisburg, Aug. 11, c. conc. pavement 46 ft. and variable in width, 2,652 ft. L. R. 228, Sect. 4-A, T. R. 80 Frenchtown Rd. 6 mi. from city of Pittsburgh, Allegheny Co., from Mario Constr. Co., Inc., 25 Boundry St., Pittsburgh, Zone 13, $166,255***wid.n. pavement with c. conc. base and crushed aggregate base 4 ft. and variable in width bit. surf. new base and existing pavement 20 ft. and variable in width incl. constr. rein.-con. structure and incl. constr. crushed aggregate base with bit. surf. 32 ft. 20 ft. and variable in width 17,282 ft. Appl. 1012 (2A and 2) from point in Weatherly Boro. northeasterly, Carbon Co., from Herman W. Riebe, t/a Charles Riebe, Lansford, $234,305*** crushed aggregate base with bit. surf. 24 ft. wide and 4 ft. of bank run gravel surf. course 18 ft. wide incl. one rein.-con. structures, and one I-beam bridge course 18 ft. wide incl. one rein.-con. structures, and 2,608 ft. L. R. 25015 (1-B); 25060 (2B) east of Howard Corners and in vicinity of Robinson Corners, t/w to from Thomas A. Meeks, R. D. 2, Valencia, $71,614***bit. surf. pavement 16 ft. 50 ft. and variable in width c. conc. pavement variable in width 17,357 ft. L. R. 157 (2), 159, (20), U. S. 22, Lehigh Co., from Collins & Maxwell, Inc., Easton, $167,190***c. conc. pavement variable in width 24 to 45 ft. incl. constructing 2 rein.-con. boxes and 1-beam bridge, divided by consisting of c. conc. pavement 22 ft. and variable on each side of concrete divisor, crushed aggregate base with bit. surf. 24 ft. and boxes drainage for existing river structure and roadway drainage approx. 8,029 lin. ft. service roads and ramps of c. conc. pavement and crushed aggre-

gate base with bit. surf. variable in width 14 ft. to 26 ft. incl. constructing 3 1 beam bridges and reinf.-conc. arch 26,545 ft. L. R. 339 (40) 376 (50) 736 Ext. (40-B). T. R. $1,837. Washington and Allegheny Counties, from Harrison Constr. Co., 1101 Western Ave., Pittsburgh, 33. $2,676,818. CD 7/27.

Tex., Nacogdoches—City, rejected bids July 14 for conc. type paving 41,423 sq. yd. streets. L. B. $192,723. CD 7/26, under LB.

Utah—State Rd. Comm., Salt Lake City, road mlb bit. 19.405 mi. State Hy. between Thompson and CCo. FAP F-10(18), Grand Co., and gravel 1.9 mi. state hy. between Vernon and St. John, Tooele Co., from W. W. Clyde & Co., Springville. $130,071 est. $161,433 and $219,858, est. $252,424 respectively. Bids 8/8.

CONTRACTS AWARDED

Maine—State Hy. Comm., Augusta, bit. grav. surf. 2.56 mi. F. A. Sec. Proj. S-9206 (1) from Jct. to Wyman & Simpson, Inc., Augusta. $139,334. bit. macad. surf. 2.95 mi. F. A. Sec. Proj. S-0224 (1), Gorham, to Frank Rossi, R. F. D. 5-A, Gardiner. $206,435. Bids 8/9. CD 8/4.

▲ Massachusetts—Commonwealth of Mass., Dpt. P. Wks., Boston, by grading, concrete rigid frame and 11 steel stringer bridges, F 275 (9) (10), Acton, Boxborough, Harvard and Littleton, to G. L. Wyner Co., Inc., 12 Newland St., Malden. $2,699,790. Bids 7/25, awarded 8/1. CD 8/4.

▲ New Jersey—New Jersey Turnpike Auth., Trenton, Contr. 44, superstructure 19 bridges and for one product to be placed upon abutments and piers which will be constructed under Contr. 31, 32 and 39 and other incidental work, in connection with constr. turnpike between relocated Bayway Ave. and relocated Humboldt Ave., Union Co., to Poirier & McLane Corp., 33 W. 42 St., New York, N. Y. $4,068,675; Contr. 56 substructure and superstructure of New York, Susquehanna & Western R.R. and New York Central R.R. overpass, etc., Ridgefield, Bergen Co., to Stock Constr. Co., Grand Central Terminal, New York, N. Y., (2) short span, cast-in-place. $1,843,480. Bids 8/1, awarded 8/16. CD 8/10, under LB.

N. J., Burlington—City, paving W. Broad St. from High St. to Kiem Blvd. to Albert E. Barrett, 530 New York Ave., Trenton. $166,946. Awarded 8/8. Samuel R. Probasco, Burlington, engr.

▲ New Mexico—State Hy. Dpt., Santa Fe, bit. top course surf. 9.504 mi. U. S. 66 between Tucumcari and Texas-New Mexico State line FAP No. FI-127 (14), Quay Co., to Allison & Haney, Box 1507, Albuquerque. $537,491. Asph. processed base, asph. and stone chips sealing 4.008 mi. S. R. 210 from Forrest west and from Forrest north, FAP No. S-25 (2), Quay Co., to Skousen-Hise Constr. Co., 207 Springer Bldg., Albuquerque. $67,792***grading, 2 treated timber bridges 41 ft. and 26.74 ft. asph. processed base, bit. top course surf. 6.849 mi. S. R. 119 between Anton Chico and Dilia, FAP No. S-153 (1), Guadalupe Co., to G. L. Martin, 520 S. Tulane St., Albuquerque. $132,574***asph. processed base, asph. and stone chips sealing 10.719 mi. U. S. 64 between Taos and Eagle Nest, FP No. FAP 154 (4), Taos Co., and bit. top course surf. 6.312 mi. U. S. 550 between Farmington and Shiprock, FAP Nos. F 147 (9) and F-HP 2 (1), San Juan Co., to Floyd Haake, 1201 Sierra Vista St., Santa Fe. $79,744 and $248,987 respectively. Grand total $1,066,588. Bids 8/11. CD 8/3.

▲ Ohio—State Dpt. Hys., Columbus, grading, draining, slope protection, USR 23, Scioto Co., to Frowine Constr. Co., 821 Prospect St., Portsmouth. $177,320, est. $234,100***paving, width, constr. roadway, slab and railing on antifusing concrete spandrels filled with bridge 1 span Type T 71F 35, USR 50N-5N, Delphos, Allen Co., to Launder & Son Inc., Sta. F. Box 6, Toledo. $393,435, est. $424,400*** grading, draining, paving Type T 50 and T 71, Cleveland, USR 6, Cuyahoga Co., to The Horvitz Co., 913 Midland Bldg., Cleveland. $694,227, est. $775,500*** bit. one proposal USR 22-SRS, Harrison Co., to Hoar Spring, Inc., Box 177, New Philadelphia. $62,237, est. $62,240*** width resurf. Type T 35, SR 13, village of Glouster, Athens Co., to Fenton Constr. Co., P. O. Box 310, Ashland. $118,486, est. $116,400***resurf. Type T 25, USR 52, Brown Co., to Gracco Roadways & Constr. Co., Inc., 5207 Eastern Ave., Cincinnati. $52,511, est. $56,600*** width resurf. Type T 35, SR 5, village of Enon, Clark and Greene counties, to Hoyt & Cook, 3001 Gas & Electric Bldg., Dayton. $158,169, est. $161,535*** b. conc. resurf. Type T 35, USR 146, village of Waynefield, Allen and Auglaize Counties, to Churchill Constr. Co., 1126 State St., Lima. $68,639, est. $69,900*** grading, draining, paving re-erecting former Bridge AD 74.08 A, steel truss, constr. concrete capped pile abutments and created strip fiber, T 35, Type T 32 on SR 5, Adams Co., to The Ross Constr. Co., 313 Hartman Bldg., Columbus. $75,975, est. $78,800***grading, paving, draining, Type T 71, SR 14, Portage and Summit Counties, to Kaine, DiNardo & Haeney, Inc., 65 W. Indianola Ave., Youngstown. $386,229, est. $362,500. Grand total $2,187,228. Bids 7/27. CD 7/14.

▲ Oklahoma—State Hy. Dpt., Oklahoma City, Zone 5, stabilized aggregate base bit. surf. 7.588 mi. State Hy. 51 north of Kiefer, Pittsburg Co., and stabilized base and rock asph. surf. 4.1 mi. State Hy. 9 east of Wetumka, Hughes Co., to Fork-Watt Co., 711 NW 38 St., Oklahoma City, Zone 6. $204,350, est. $210,496, and $222,275, est. $244,542, respectively*** stabilized aggregate base and double bit. surf. 6.966 mi. State Hy. 21 east and south of Haworth, and grading, draining 6.904 mi. and 3 concrete culverts State Hy. 21 east and south of Haworth to Mc-Curtain Co., to Conemour Constr. Co., Ardmore. $129,307, est. $142,562 and $78,140, est. $63,549 respectively***grading, draining, 6.873 mi. State Hy. 73 east from Sweetwater to Roger Mills Co. Line, Beckham Co., to G. E. Keck, Fairview. $78,326, est. $42,084***stabilized aggregate base and bit. surf. 5.206 mi. U. S. 59 south of U. S. 62, Adair Co., to H. D. Youngman, Baxter Springs, Kan., $120,689, est. $154,222***c. conc. 2.342 mi. U. S. 75 south of Okmulgee Co., to Dahlgren & Brooks Insurance Bldg., Oklahoma City, Zone 2. $135,726, est. $156,905***stabilized aggregate base, double bit.-surf. 2.515 mi. State Hy. 87 at Isabel, McCurtain Co., to Myron Groseclose, Box 266, Bethany. $159,507, est. $162,850***grading, draining 5.9 mi. State Hy. 15 west of Red Rock, Noble Co., to Clark Constr. Co., Pawnee. $56,826, est. $68,930***grav. surf. 5.362 mi. State Hy. 48, south of Kenefic, Bryan Co., to G&T Constr. Co., Meeker. $72,635, est. $84,158***grading, draining, 1.59 mi. by pass route of U. S. 66, Lincoln Co., to Classen Oklahoma Co., to W. E. Steelman, 2800 NE 4 St., Oklahoma City, Zone 4. $301,123, est. $356,115. Grand total $2,558,907. Bids 8/8.

EARTHWORK, WATERWAYS

BIDS ASKED

† New Jersey—B.A. About 8/29—U. S. Eng., 121 N. Broad St., Phila., 1, Pa., maintenance dredging in Tuckerton Creek, Ocean Co., about 16 mi. north of Atlantic City, Inv. No. CIVENG-36-109-51-9.

† Arkansas—B.A. 8/29—U. S. Eng., P. O. Box 60, Vicksburg, Miss., pile dike construction and repairs on Arkansas River between Mile 34 and River Mile 98, Serial No. CIVENG-22-052-51-17. CD 12/24/43.

† Illinois—B.A. 8/29—U. S. Eng., U. S. Court House and Custom House, St. Louis, 1, Mo., stockpiling material, constr. levees, Dorena Fountain Bluff Levee and Drainage Dist., Proj. Item III-B, Jackson Co., CIVENG 23-063-51-6.

† Louisiana and Arkansas—B.A. 8/29—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, clearing, snagging, approx. 3.41 mi., excav. approx. 140,000 cu. yd. material from Posten Bayou, Bossier Parish.

N. J., New Lisbon—B.A. 8/29—State Div. Purchase & Property, State House, Trenton, sanitary and sewer lines at State Colony. Approx. $50,000.

† New York and New Jersey—B.A. 8/29—U. S. Eng., 80 Lafayette St., New York, 13, N. Y., dredging approx. 608,400 cu. yd. place measurement all material except ledge rock from New York and New Jersey Channels, Sect. 3 Areas B and C, Richmond Co., New York and Middlesex Co., N. J., Serial No. CIVENG-30-075-51-12. Bid date changed. CD 7/31.

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WARSAW, INDIANA

Pennsylvania—B. A. 8/29—Dpt. Forests & Waters, 404 Education Bldg., Harrisburg, constr. Auburn silt impounding basin, between Auburn and Landingville on Schuylkill River Desilting Project. $300,000. Plans deposit $10. Schuylkill River Project Engineers, 20 S. 25 St., Phila., engrs.

† Louisiana—B.A. 8/30 U. S. Eng., foot of Prytania St., New Orleans, 1,960 lin. ft., pile dikes, 10,500 cu. yd. grading, 1,680 squares lumber mattress, 3,200 tons stone on mattress, and in dike, 4,840 tons stone in Upper Bank paving, 250 tons gravel, 50,000 lin. ft. piles, located on and adjacent to right descending bank of Red River, Mile 335.5 (1938), in Caddo Parish, about 14 mi. east of Uni, Item D-335.5-R, CIVENG 26-047-51-24.

† Nebraska—B.A. 8/30—Bureau Reclamation, Dpt. Interior, Grand Island, driving test piles at Ashton Dam site, Middle Loup Division, Missouri River Basin Proj., approx. 5 mi. northeast of Loup City, Spec. 3149. L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr.

Puerto Rico—B.A. 8/30—Puerto Rico Transportation Auth., San Juan, constr. Arecibo Harbor Proj., bulkhead, wharf. Plans deposit $25.

N. S., Upper Blandford—B.A. 8/30—Acting Secy. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., breakwater. Approx. $56,000. Plans deposit $20. R. Blais, c/o owner, engr.

† Kentucky—B.A. on or about 8/31—U. S. Eng., 830 W. Broadway, Louisville, Zone 3, raising, extend. lower guide wall, Lock and Dam 49, Ohio River, Uniontown, CIVENG 15-029-51-15.

† California—B.A. 8/31—Bureau Reclamation, Friant, constr. earthwork and concrete lining, Station 1624 to Station 1645, Friant-Kern Canal, Central Valley Proj., Approx. 18 mi. east of Fresno, Spec. 3240. Michael W. Straus, comr.

† Georgia and South Carolina—B.A. 8/31—U. S. Eng., Post Office Bldg., Savannah, Ga., clearing reservoir, Group III, Clark Hill Proj., Savannah River Basin, Savannah River, Serial No. CIVENG 09-233-51-2. Bid date changed. CD 7/14.

Michigan—B.A. 8/31—U. S. Eng., 2015 Cadillac Tower, Detroit, rein.-con. enclosure for pumpwell, steel doors St. Marys Falls Canal, Proj. G 20-064-52 (7).

† Mississippi—B.A. 8/31—U. S. Eng., P.O. Box 60, Vicksburg, Steele Bayou Channel improv., Item St. 37 Mile 33.50 to Mile 33.70 and Mile 37.11 to Mile 40.50, CIVENG 22-052-51-18.

N. Y., Governors Island (br. New York)—B.A. 8/31—Triboro Bridge & Tunnel Auth., 10 State St., construct rip-rap tidal breakwater, furnishing, placing rip-rap in existing fender structural and misc. work, vic. ventilating bldg. Plans deposit $5.

† Ohio—B.A. 8/31—U. S. Eng., Madison Ave. and 8 St. West, Huntington 18, W. Va., Black Fork Channel rectification, below Charles Mill Dam, Muskingum River Reservoirs, Serial No. CIVENG-46-022-51-15. Bid date change. CD 8/4.

† Washington—B.A. 8/31—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, right bank improv., Mud Mountain Dam, White River, Serial No. CIVENG-45-108-51-5. CD 7/5, under LB.

† B. C., New Westminister—B.A. 8/31—Acting Secy. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., dredging 150,000 cu. yd. gravel silt debris Fraser River, St. Mungo Bend, approx. $100,000. R. Blais, c/o owner, engr. CD 10/4.

Que., Riviere du Loup—B.A. 8/31—Acting Secy. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., dredging 82,900 cu. yd. mud, sand and clay. Approx. $50,000. R. Blais, c/o owner, engr.

Que., St. Johns—B.A. 8/31—Acting Secy. Dept. P. Wks., Hunter Bldg., Ottawa, Ont., dredging Richelieu River. Approx. $279,000. R. Blais, c/o owner, engr. CD 6/30.

† Ill., Chicago—B.A. 9/1—U. S. Eng., 520 Merchandise Mart Zone 54, breakwater in Chicago Harbor and Lake Michigan, $50,000. Plans deposit $5.

† Indiana—B.A. 9/1—U. S. Eng., 830 W. Broadway, Louisville, 3, Ky., restoring streets, Front St., flood protection works, etc., Cannelton, CIVENG 15-029-51-18.

Minn., Olivia—B.A. 9/1—Renville Co., C. A. Strombud, constr. repair F pt Co. Ditch 45, south of Renville, 116,558 cu. yd. excav. $28,000. E. L. Chamberlain, Olivia, engr.

† Ohio—B. A. about 9/4—U. S. Eng., Madison Ave. and 8 St., West Huntington, W. Va., Black Fork Channel rectification, below Charles Mill Dam, Muskingum River Reservoirs, CIVENG 46-022-51-15. CD 4/23.

† Oregon—B.A. 9/5—Bureau Reclamation, Dpt. Interior, Bend, repairing Arnold diversion dam, Deschutes Proj., Spec. R1-96 (Region 1). L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr.

CONTRACTS AWARDED

N. S., North Ingonish—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., breakwater-wharf replacement, to R. A. Allaby & R. P. McLeod, Truro. Approx. $246,445. Bids 7/5. CD 6/20.

AIRPORTS

BIDS ASKED

B. C., Albert Bay—SEAPLANE LANDING—B.A. 8/30—Acting Secy. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., seaplane landing. Approx. $35,000. Plans deposit $20. R. Blais, c/o owner, engr.

Que., St. Hubert—AIRPORT IMPRVS.—B.A. 8/30—Canadian Commercial Corp., engrs., 70 Lyon St., Ottawa, reconstruct roads, aprons, areas and surface drainage at airport for Govt. of Canada, Dpt. National Defense, Air, Lisgar St., Ottawa. Plans deposit $25.

N. Y., Idlewild—TERMINAL BLDG.—B.A. 8/31—The Port of New York Auth., 111 8th Ave., New York. Zone 11, constr. & instl. work at Scott Air Force Base, Eng. 11-032-51-1, from McCarthy Bros. Constr. Co., 4903 Delmar Bldg., St. Louis, 8, Mo., $917,250 (on govt. plans and specifications) from Henry C. Beck Co., 1315 Pacific St., Dallas, Tex., $884,860, alternate bid, using own plans. CD 7/19.

CONTRACTS AWARDED

† Ill., Belleville—HOUSING—U. S. Eng., Merchandise Mart, Chicago, Zone 54, Aug. 10, 2 story row type houses, incl. appurtenant work at Scott Air Force Base, Eng. 11-032-51-1, from McCarthy Bros. Constr. Co., 4903 Delmar Bldg., St. Louis, 8, Mo., $917,250 (on govt. plans and specifications) from Henry C. Beck Co., 1315 Pacific St., Dallas, Tex., $884,860, alternate bid, using own plans. CD 7/19.

PUBLIC BUILDINGS

BIDS ASKED

N. Y., Lewittown—B.A. 8/28—SCHOOL—Bd. Educ., Union Free School Dist. 31, Levittown, Northside Grade School, Kingfisher Lane, $850,000. Plans deposit $50. F. P. Widersum, 240 Rockaway Ave., Valley Stream, archts.

N. Y., South Huntington—SCHOOL—B.A. 8/28—Bd. Educ., Union Free School Dist. 13, High School Bldg., Walt Whitman Rd., general contr.; plumbing; heating and ventilating; electr. cal. work for grade school. Plans deposit $40. William I. La Fon, Jr., 20 S. Main St., Southampton, archt.

Wis., Waukesha—SCHOOLS—B.A. 8/28—Bd. Educ., 400 N. Grand Ave., 2 story, part bsmt., L shaped 177x236 ft., steel, brick, stone Hadfield School, $520,000. 2 story, 68x225 ft. steel, brick, stone White Rock School, $280,000. Plans deposit $10. Ebling, Plunkett & Keymar, 1220 N. Milwaukee St., Milwaukee, Zone 2, archts. CD 7/25/43.

Ont., Timmins—SCHOOL—B.A. 8/28—Timmins Public School Bd., Mrs. F. M. Springham, secy., Third Ave., 2 story school in southwest section of town. Plans deposit $25. S. B. Coon & Son, St. Thomas St., Toronto, archts.

Kan., Olathe—DORMITORY—B.A. 8/29—State Bd. Social Welfare, Topeka, dormitory and classroom bldg. at State School for Deaf, $245,000 for bldg., $50,000 for equip., C. L. Marshall, Topeka, state archt.

Mass., Grafton—SCHOOL—B.A. 8/29—Town School Dept. Senior and Junior High School, $600,000. Plans deposit $25. Sturgis Assoc., 120 Boylston St., Boston, archts. CD 12/5/49.

Mo., Gardenville (St. Louis 23, P.O.)—SCHOOL—B.A. 8/29—Bayless Consolidated School, 4530 Weber Rd., St. Louis, Zone 23, Bayless School alterations and addn., 4530 Weber Rd. Plans deposit $50; Marcel Boulicault, 922 Ambassador Bldg., 411 N. 7 St., St. Louis, Zone 1, archt.

N. Y., Laurel Hollow—SCHOOL—B.A. 8/29—Bd. Educ., Union Free School Dist. 12, Grosset, general constr.; heating and ventilating; plumbing and sanitary work; electric work for elementary school, Cold Spring Harbor Rd. Plans deposit $50; general constr., $25 each mech. trades. George E. Post & Sons, 101 Park Ave., New York, archts.

▲† Pa., Pittsburgh—GENERAL MEDICAL HOSPITAL—B.A. 8/29—U. S. Eng., 925 New Federal Bldg. Zone 19, 1 story brick, concrete steel 58x675 ft., general medical hospital with two 34x225 ft. wings, University Pl., $13,000,000. Extension, Eberhard & Brown, Ingham & Boyd, Mitchell & Ritchey, York & Sawyer, 230 Oliver Bldg., archts. and engrs. CD 7/17.

B. C., Burnaby—SCHOOL—B.A. 8/29—A. C. Durkin, secy., Strata School Dist. 41, 7800 McKay Ave., New Westminster, 1 and 2 story, 9-rme Junior High School, $300,000. Plans deposit $50. K. J. Sambrook, 615 Columbia St., New Westminster, archt.

Ont., Camp Borden—SCHOOL—B.A. 8/29—A. J. E. Smith, engr., c/o Central Mortgage & Housing Corp., 395 Fleet St., W. Toronto, 10-classroom masonry school at Artillery Station, Camp Borden, D.N.D. (Non-Urban) No. 5/50 Artillery. Approx. $250,000. Plans deposit $60.

Fla., Pensacola—HIGH SCHOOL—B.A. 8/30—Escambia Co. Bd. Pub. Instruction, Pensacola, F. D. Beggs High School, $750,000. Yenge & Hart, Blount Bldg., archts. CD 8/8/49.

Fla., Tampa—HOUSING—B.A. 8/30—Tampa Housing Auth., c/o M. Leo Elliott, archt., Citizens Bldg., Tampa, 100 housing units, College Hill Homes Proj. FLA. 3-7. CD 11-21.

Conn., Norwich—LAUNDRY—B.A. 8/30—State Capitol, Hartford, laundry, $150,000. Plans deposit $30. Extended date, Creighton & McGuire, 140 State St., New London, archts. CD 8/1.

Kan., Kansas City—POWER PLANT IMPROVEMENTS—B.A. 8/30—Bd. Pub. Utilities, Contr. 213, power improvs., power piping for new turbo-generator sys. Burns & McDonnell Eng. Co., 95 and Troost Sts., Kansas City, Mo., engrs. CD 11/24/48.

Kan., Olathe—COURT HOUSE, etc.—B.A. 8/30—Johnson Co., Olathe, court house and jail bldg. $985,000. Glover & Newcomb, 3102 Harrison St., Topeka, archts. CD 7/14.

▲ Md., Baltimore—SCHOOL—B.A. 8/30—City Bureau of Bldg. Constr., 410 Municipal Bldg., Zone 2, classroom, steel, concrete colored Cherry Hill School, Cherry Hill and Seabury Rds., $1,065,000. Plans deposit $50. G. Eugene Adams, 2439 N. Charles St., architect; Crout, Snyder & Crandall, 20 E. Lexington St., structural engrs. Henry Adams, Inc., 12325 St. Paul St., mech. engr. CD 12/7/44.

N. Y., Brooklyn—HOUSING—B.A. 8/30—New York City Housing Auth., 63 Park Row, New York, Zone 7, topsoil and planting of Williamsburg Houses Proj. N.Y-1301 and Kingsborough Houses Proj. NY-5-6.

N. Y., Port Washington—HOUSING—B.A. 8/30—North Hempstead Housing Auth., Valley School, Manhasset, Contr. 1, general work; Contr. 2, plumbing; Contr. 3, electrical work, and Contr. 4, heating work for 66 unit housing, Sandy Hollow Sect., $721,749. Plans deposit $40. William Lescaze, 211 E. 48 St., New York, N. Y., archt. CD 6/12, under LB.

O., Cuyahoga Falls—HOSPITAL—B.A. 8/30—Dpt. P. Wks., S. U. Linzell, dir., Ohio Dpt. Bldg., Columbus, 112 bed hospital for Summit Co. Receiving Hospital, $980,736. Plans deposit $15. Treiber Saganczesky, 429 Chestnut Blvd., archt., H. G. Allen, c/o owners, constr. archt. and engr. CD 12/23/49.

Pa., Allentown—HOSPITAL—B.A. 8/30—General State Auth., 18 and Herr Sts., Harrisburg, general heating; plumbing; electrical work 60-bed hospital at Allentown State Hospital, $540,000. Plans deposit $10. each. Wait & Hahn and Wiesenberger Assocs., 454 Hamilton St., archts., A. F. Jones, c/o owner, ch. engr. CD 11/28/49.

Pa., Connellsville—HOUSING—B.A. 8/30—Housing Auth. of Connellsville, Connellsville, 60 unit housing, $550,000. Marks Fisher & Simbole, Grogan Bldg., Pittsburgh, archts.

Pa., Elizabethtown—APARTMENT—B.A. 8/30—General State Auth., 18 and Herr Sts., Harrisburg, six-family apartment, Men's dormitory and women's dormitory at State Hospital for Crippled Children, $260,000. Plans deposit $10. Ross W. Singleton, George M. Ewing Assoc., 466 Breneman Bldg., Lancaster, archts. A. F. Jones, c/o owner, ch. engr.

S. C., Aiken—HOUSING—B.A. 8/30—Aiken Housing Auth., Aiken, 44 housing units. Extended date. CD 8/3.

Tenn., Knoxville—BUSINESS ADMINISTRATION—B.A. 8/30—At Office, John L. Neeley, Jr., Director of Physical Plant, Room 61, Administration Bldg., Business administration bldg., for University of Tennessee. Plans deposit $10. Beaver & Wilhoit, Journal Bldg., Knoxville, archts. CD 5/11, under LB.

Va., Hilton Village—SCHOOL—B.A. 8/30—School Bd. Office, 118 Main St., Hilton Village, school, auditorium and cafeteria, Gloucester Dr. $350,000. Plans deposit $100. Samuel N. Mayo, 209 Sauer's Office Bldg., Richmond, archt.

N. B., Chatham—SHOP—B.A. 8/30—Canadian Commercial Corp., engrs., 70 Lyon St., Ottawa, Ont., gun testing shop for Govt. of Canada, Dpt. National Defense, Air, Lisgar St., Ottawa, Ont. $75,000. Plans deposit $25.

Que., St. Hubert—BARRACK BLOCK—B.A. 8/30—J. D. McCarthy, secy., c/o Canadian Commercial Corp., 70 Lyon St., Ottawa, Ont., 280-man barrack block at R.C.A.F. Station, Tender No. G 14-54-30. Approx. $250,000. Plans deposit $100.

Conn., Torrington—SCHOOL—B.A. 8/31—Bd. Educ., City Hall, school and gymnasium, $600,000. Plans deposit $35, refundable. Ernest F. Sibley, 7 S. Main St., West Hartford, archt. CD 8/9.

† Md., La Plata—HOUSING—B.A. 8/31—U. S. Eng., Washington Dist., First and Douglas Sts., Wash. 25, D. C., family quarters, Army Receiving Station, Eng. 49-080-51-1, 1142.

N. Y., Brooklyn—HOUSES—B.A. 8/31—New York City Housing Auth., 63 Park Row, New York, 3, N. Y., terr. and planting of Fort Greene Houses Proj. NYS-1. Contr. No. GR-50-4.

N. Y., Port Washington—SCHOOLS—B.A. 8/31—Bd. Educ., Union Free School Dist. 4, Port Washington, 3 schools at Manhasset Bay, Manor Haven and South Salem, $579,000. Eggers & Higgins, 100 E. 42 St., New York, 17, N. Y., archts. CD 3/2.

N. C., Boone—DORMITORIES—B.A. 8/31—Appalachian State Teachers College, c/o Northup & O'Brien, archts., Winston-Salem, Boys' and girls' dormitories. Plans deposit $15 each. Bids 5/25 rejected. CD 6/7, under LB.

▲ Pa., Harrisburg—SCHOOL—B.A. 8/31—Harrisburg School Bd., 121 Chestnut St., general construction, heating and ventilating, plumbing and electrical work for Camp Curtin Junior High School, 6-2nd Division Sts. $1,500,000. Plans deposit $20. Lawrie & Green, 321 N. Front St., archts. CD 9/1.

Tex., Navasota—SCHOOL—B.A. 8/31—Navasota Independent School Dist., Navasota, 1 story brick, concrete steel school, $250,000. Plans deposit $25. J. A. Pitzinger, Southland Life Bldg., Dallas, archt. CD 5/12.

Va., White Gate—INSTITUTION—B.A. 8/31—office, Smithey & Boynton, archts., and engrs., 112 Kirk Ave., W., Roanoke, constr. rooms, bldgs. a1 and 2, boiler house, incl. equip., sewage and treatment plant, at Piland County Correctional Farm, near here, for State of Virginia, Richmond. Approx. $400,000. Plans deposit $25.

† Wash., Richland—MAINTENANCE AND DEVELOPMENT BLDG.—B.A. 8/31—General Electric Co., operator of Hanford Works for Atomic Energy Comm., Richland, 1 story 41x168 ft., masonry instrument maintenance and development bldg. at Hanford Works.

N. S., Nappan—OFFICE, etc.—B.A. 8/31—Acting Secy., Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., office and laboratory, Dominion Experimental Farm. Approx. $115,000. Plans deposit $25. G. Brault, c/o owner, archt.

Ont., Camp Borden—SCHOOL—B.A. 8/31—A. J. E. Smith, engr. Central Mortgage & Housing Corp., 395 Fleet St., W. Toronto, 18-classroom masonry school at the Army Camp, Camp Borden, D.N.D. (Non-Urban) No. 4/50 Army, $400,000. Plans deposit $50. CD 12/2.

† N. M., Los Alamos—COMMUNITY CENTER—B.A. September—U. S. Atomic Energy Comm., Los Alamos, commercial facilities, community center. Approx. $325,000. Plans deposit $50. CD 6/8.

Ill., Batavia—SCHOOL—B.A. 9/1—Batavia Bd. Educ., Batavia, Batavia High School addn., incl. gymnasium seating 2,000. $250,000-$300,000. Ralph Dipit, Empire Bldg., Rockford, archt. CD 2/14/46.

Ky., Cadiz—HOSPITAL—B.A. 9/1—At Office R. B. Piercy, press, Trigg Co. Farmers Bank, Cadiz, completion Trigg County Hospital. Plans deposit $25. Thomas J. Nolan & Sons, 311 Kentucky Home Life Bldg., Louisville, Zone 2, archts.

† N. Y., New York—POST OFFICE, etc.—B.A. 9/1—General Services Admin., Pub. Bldgs. Service, 250 Hudson St., New York, Zone 13, misc. repairs to U. S. Post Office and Annex. CD 5/8.

N. Y., New York—HOUSING—B.A. 9/1—New York City Housing Auth., 63 Park Row, New York, Zone 7, topsoil and planting of Vladeck City Houses project No. NYC-1. Contr. No. GR-00-9.

N. D., Demilliion—MEDICAL and SCIENCE—B.A. 9/1—State Bd. Regents, Pierre, medical and science bldg. at State University, $300,000. Hughes, Slatterwick & Fritzel, Sioux Falls, S. D., archts.

† Va., Arlington Farms—BUILDING ALTERATIONS—B.A. 9/1—General Services Admin., Public Bldgs. Service, General Services Bldg., 14 and F Sts. N. W., Building 9 (Maine Hall) alterations. Plan deposit $5.

Va., Petersburg—LAUNDRY—B.A. 9/1—State of Virginia c/o Dr. Joseph E. Barrett, N. 12 St., Richmond, laundry at Central State Hospital for Negroes, $170,000 incl. equip. Baskervill & Son, 2313 W. Cary St., Richmond, archts. CD 12/7/44.

† Alaska, Fort Richardson—BACHELOR OFFICERS QUARTERS—B.A. 9/7—U. S. Eng., (APO 924 c/o PM, Seattle, Wash.) Anchorage, two 2 story bsmnt., approx. 5,300 sq. ft. frame Bachelor Officers Quarters Bldgs. No. 5012 and 5144, Inc. S 95-507-51-1C. Bids 7/27, rejected. CD 8/3, under LB.

† Alaska, Fort Richardson—ENLISTED MENS SERVICE CLUB—B.A. 9/7—U. S. Eng. (APO 924, c/o PM, Seattle, Wash.) Anchorage, 1 story bsmnt., 25,000 sq. ft. concrete with concrete block filler walls, Enlisted Mens Service Club Bldg. 5722, S 95-507-51-9. Bids 7/27 rejected. CD 8/3, under LB.

LOW BIDDERS

Calif., Fresno—SCHOOL, etc.—State Div. Architecture, P. Wks. Bldg., Sacramento, Aug. 8, general contract, 88,000 sq. ft., rein.-con. 1 story steel men's gym-natorium (physical education facilities) demonstration school, and industrial arts bldg., at Fresno State College, from Pacific Coast Builders, 2530 18 St., San Francisco, $822,180.

† Calif., Livermore—KITCHEN, etc.—Veterans Admin., Vermont Ave. between H and I Sts. N. W., Wash. 25, D. C., kitchen and dining hall bldg. at Veterans Administration Spec. 502e Proj. 2845, from Fraser Steffens & Rounds, 155 South Park St., San Francisco, $574,000 (Correction—low bidder). CD 8/16, under LB.

Calif., Los Angeles—ARTS—Bd. Regents University of California, 405 Hilgard Ave., Aug. 8, 65,000 sq. ft. rein.con. arts bldg. from Al-Co Co., 5423 Flemish Village Lane, $712,725. CD 7/7.

Calif., Redding—SANITORIUM—Shasta Trinity, Siskiyou and Lasser Counties, Courthouse, Aug. 10, 1 story, rein.con. 75 bed Cascade Sanatorium with power plant from Central State Constr. Co., 543 Market St., San Francisco, $696,800. CD 7/18.

Calif., San Francisco—SCHOOL—Dpt. P. Wks., City Hall, Aug. 9, general contract 2 story, 50,000 sq. ft. taped rein.con., Fremont School at O'Farrell and Vega, Masonic and Anzavista Sts., Spec. 851, from Mire & Roberts, 93 Mission St., San Francisco, $669,900. CD 7/26.

▲ Conn., New Haven—HOUSING—City of New Haven Housing Auth., City Hall, Aug. 9, Brookside Moderate Rental Housing, from Fusco Amatruda Co., 50 Amity Rd. $2,948,684. CD 7/19.

Conn., Storrs—COLLEGE OF PHARMACY—State, State Capitol, Hartford, Aug. 9, College of Pharmacy, University of Connecticut, from Central Constr. Co., 107 Cedar Rd., West Hartford, $634,423.

Del., Farnhurst—HOSPITAL—Delaware State Hospital Bd. Trustees, Farnhurst, Aug. 2, general contract hospital addn. from Ernest D. Subatino & Sons, 2600 W. 4 St., Wilmington, $549,000. CD 7/28.

▲ Fla., Lakeland—HOUSING—Lakeland Housing Auth., Lakeland, Aug. 11, 240 housing units, from C. A. Lenard, Inc., 207 N. Rome Ave., Tampa, $1,614,-157. CD 7/14.

Ill., Northfield—SCHOOL—School Dist. 225, 1508 Shermer Rd., Aug. 4, general contract brick, stone high school from Peter Hamlin Constr. Co., 9 S. Clinton St., Chicago, Zone 6, $792,000. CD 7/25.

▲ Md., Baltimore—SCHOOL—City Bureau of Bldg. Constr., 410 Municipal Bldg., Zone 2, Aug. 8, 1 story, part bsmnt., concrete, steel, masonry Armistead Gardens School, from Chas. G. Scrivener Co., Inc., 319 St. Paul St., $1,222,377. CD 7/26.

▲ Mass., Lynn—HOUSING—City of Lynn Housing Auth., John Cavanagh, chr., 58 Andrews St., 2 and 3

story, 50 bldgs., Veterans Housing, from John Bowen Co., 129 Newbury St., Boston, $4,890,000. CD 7/24.

▲ N. Y., Buffalo—HOSPITAL, etc.—Dpt. P. Wks., State Office Bldg., Albany, Aug. 9, cancer hospital and research center at Roswell Park Memorial Institute, from Wm. A. Berbusse Jr., Inc., 101 Park Ave., New York $4,565,000** heating, from Joseph Davis, Inc., 120 W. Tuper St., Zone 3, $889,973** sanitary work, from Carl C. Grimm, 259 Delaware Ave., Zone 2, $497,916** electrical work, from Volker Bros., Inc., 891 Washington St., $529,420. Bids 8/9.

▲N. Y., New York—HOUSING—New York City Housing Auth., 63 Park Row, Zone 7, Aug. 15, foundations and general contract for Stephen Foster Houses, Proj. No. NYS-30, Sect. 1, incl. Bldgs. 1, 2, 3 and 4 and 5 in area bounded by W. 114 St., 5 Ave., W. 115 St., Lennox Ave. and in area westerly portion of block bounded by W. 133 St., 5 Ave., W. 134 St. and Lenox Ave., from George F. Driscoll Corp. & Moccia Constr. Corp., 41 E. 42 St., Zone 17, $4,465,644; plumbing, from Jesse E. Kahn, Inc., 131 S. 21 St., New York, Zone 11, $486,478. CD 8/1.

N. C., Salisbury—HOSPITAL, etc.—Rowan Memorial Hospital, Inc., general contract hospital addns., alterations, from L. S. Bradshaw, Salisbury, $716,250. CD 7/10.

R. I., Barrington—SCHOOL—Town Bd. Selectmen, Barrington, Aug. 7, Senior High School, Victory Field, from Rowley Constr. Co., 262 Central Ave., Pawtucket, $925,000.

▲ R. I., Kingston—GYMNASIUM, etc.—State of Rhode Island and Providence Plantations, F. A. Adams, purch. agt., State House, Providence, Aug. 9, gymnasium and armory, from Gilbane Bldg. Co., 90 Calverly St., Providence, $2,668,103. CD 7/24.

Tenn., Memphis—HOMES—Memphis Housing Auth., 264 N. Lauderdale St., Aug. 10, 86 homes addn. to Dixie Homes, from Sam P. Maury Constr. Co., 554 Adams Ave., $678,818. CD 7/17.

Tex., Dallas—SCHOOL—Dallas Independent School Dist., Akard and Royal Sts., Aug. 8, 2 story, brick, concrete, steel H. S. Thompson Elementary School (negro), from Farnsworth & Chambers Co., Inc., P. O. Box 74, Houston, $529,236. Est. $350,000. CD 7/13.

▲ W. Va., Morgantown—PHYSICS—West Virginia University, Morgantown, Aug. 1, physics bldg., from Lynch, Pugh & Corson, Morgantown, $1,373,890. CD 7/10.

CONTRACTS AWARDED

Ga., Milledgeville—PSYCHIATRIC—State Welfare Dpt., Atlanta, 1,000-bed psychiatric addn. to State Mental Hospital for Negroes, to A. R. Briggs Constr. Co., Macon, $613,000. Bids 8/11. CD 7/18.

Ill., Carmi—HOSPITAL—Carmi Twp. Hospital, B. G. Karns, pres., Carmi, general contract 1 story, part bsmnt., 242x273 ft., brick, concrete hospital, to Smith Constr. Co., Inc., 484 S. Governor St., Evansville, Ind., $554,331. Bids 6/16. CD 5/12.

▲ Ill., Chicago—GENERATING PLANT—University of Illinois Medical Center Comn., West Side Medical Center, Zone 12, design and construction 80x124 ft., 76 high steel-brick steam-electric generating plant, to Stone & Webster Eng. Co., 33 S. Clarke St., Zone 1, $6,000,000. CD 2/14/47.

La., Winnsboro—COURT HOUSE etc.—Police Jury Franklin Parish, 3 story, brick, granite and glass ornamented court house and jail, to J. A. Harper, Crowville, $553,867. Bids 8/3, awarded 8/11. CD 8/15, under LB.

Me., South Portland—SCHOOL—City, School Dist., City Mgrs. Office, 24 classroom Junior High School, to Miller & Beal, Inc., 465 Congress St., Portland, $516,931. CD 8/8, under LB.

▲ Md., Baltimore—HOSPITAL—State of Md., Dpt. P. Imprvts., 506 Park Ave., Zone 2, brick, steel, concrete University Hospital, Psychiatric Unit addn., Redwood at Paca, to Hughes & Co., Inc., 511 N. Charles St., Zone 2, $2,752,861, with alternates. CD 7/26, under LB.

Mass., Marblehead—HOUSING—Town of Marblehead Housing Auth., 3 Pierce St., 94 family units, 27 duplex bldgs., Seminot Site off Humphries St., State Aided Proj. 200-2, to S. & A. Allen Constr. Co., Inc., 262 Washington St., Boston, $588,590. Bids 7/19, awarded 7/25. CD 7/31.

▲ Mass., Springfield—HOUSING—City, J. T. Robinson, Dir., 124 Putnam Circle, veterans housing, to R. Perini, Sons Inc., 73 Mildred Ave., Framingham, $2,587,000. CD 7/21, under LB.

N. M., Santa Fe—CAPITOL WING—State of New Mexico, Santa Fe, two capitol wings and remodel dome on present capitol bldg., to Robert E. McKee, 610 Lincoln Ave., $597,800. Bids 8/2, awarded 8/9. CD 7/18.

▲ O., Akron—SCHOOL—Bd. Educ., 70 N. Broadway, general contract East High School addn., to The John J. Jacobson Co., 1046 N. Main St., Akron, $638,395; general contract Kenmore High School addn., to Jones, Rubin Constr. Co., 1024 Home St., Akron, $752,000. Bids 7/31, awarded 8/7. CD 8/14, under LB.

O., Cuyahoga Falls—SCHOOL—Bd. Educ., George H. Cooper, Clk., 431 Stow Ave., William H. Richardson School, and Edward G. Sill School addns., to Howe Constr. Co., Cuyahoga Falls, $734,970. Bids 8/5. CD 7/12.

Ore., Baker—SCHOOL—School Dist. 5, City Hall, 19-room High School, to Pacific Coast Co., 213 E. Reserve St., Vancouver, Wash., $924,500. Bids 7/22, awarded 8/7. CD 8/7, under LB.

▲ Ont., Toronto—OFFICE—Dpt. P. Wks., Parliament Bldgs., concrete piles for 5 story workmen's compensation office bldg., York and Fleet Sts., to Raymond Concrete Pile Co. Ltd., 63 St. Clair Ave. Total es., $3,500,000. Awarded 8/9. CD 4/5/49.

COMMERCIAL BUILDINGS

BIDS ASKED

▲ N. J., Long Branch—HOSPITAL—B.A. 8/28—Monmouth Memorial Hospital, Third Ave., hospital addn., $2,250,000. Plans deposit $50. Eppie Seaman, 901 Broad St., Newark, archts.

Minn., St. Paul—SCIENCE BLDG.—B.A. 8/29—Hamline University, H. R. Anderson, pres., 1536 Hewitt Ave., science bldg., $600,000. Holabird, Root & Burgee, 180 N. Wabash Ave., Chicago, Ill., archts. CD 6/30.

Pa., Kittanning—HOSPITAL, etc.—B.A. 8/29—Armstrong County Memorial Hospital, Kittanning, 4 story, bsmnt., 122x48 ft. brick, steel hospital addn., alterations, $700,000. Schurin & Rittenhouse, Beartz Bldg., archts.

Calif., Los Angeles—OFFICE, etc.—B.A. 8/30—Cancer Prevention Society Inc., 2628 W. 8 St., 2 story, reinf.-con. brick office and clinic, $250,000. Barker & Ott, 4334 W. Pico Blvd., archts. CD 6/7.

Kan., Pittsburg—HOSPITAL, etc.—B.A. 8/30—Mount Carmel Hospital, c/o Sister M. Aloysia, supt., altering hospital, $300,000; construct sewage treatment plant with auxiliaries, appurtenances, $50,000. Extended date. Magnolo & Quick, 4908 Delmar Blvd., St. Louis 8, Mo., archts. CD 8/8.

Minn., Fairmont — CHURCH — B.A. 8/30 — St. Paul's Lutheran Church, C. F. Gaarenstroom, chm., Bldg. Comn., superstructure, 1 story, stone church, $250,000. Plans deposit $25. F. A. Abrahamson, 544 Endicott Bldg., St. Paul, archt. CD 12/14/47.

S. D., Rapid City—HOSPITAL—B.A. 8/30—St. John's McNamara Hospital, Rapid City, hospital addn. $800,000. Ewing & Forrette, Rapid City, archts. CD 1/12.

Va., Richmond—HOSPITAL—B.A. 8/31—Louis W. Ballou & Charles C. Justice, archts., 106 E. Cary St., Richmond Eye Hospital, near 12 St., for Richmond Eye Hospital, Richmond, $400,000. Plans deposit $20.

Ont., Etobicoke (Toronto)—CHURCH—B.A. 8/31—Islington Presbyterian Church, 3893 Bloor St. W., R. R. 2, Islington, stone, brick church, 3575 Bloor St. W., and demolition present concrete structure, Approx. $275,000. Plans deposit $25.

Tex., Dallas—CHURCH—B.A. 9/1—First Baptist Church, 606 N. Ervay St., 3 story, bsmnt., brick, stone church, $500,000. John B. Danna, 2618 Cedar Springs St., archts. CD 5/4/49.

▲ Calif., San Francisco—DEPARTMENT STORE—B.A. 9/5—Sears, Roebuck & Co., Mission and Army Sts., 3 story, reinf.-con. department store with parking on roof and adjacent parking lot, 2 escalators, acoustical ceiling, air conditioning, $3,000,000. W. D. Peugh, 333 Montgomery St., archt. E. W. Kellberg, 320 Market St., engr. CD 3/13/46.

▲ N. Y., Elmira—HOUSING—B.A. 9/5—Elmira Housing Auth., 106 Woodlawn Ave., 84 family apartment $1,000,000. Plans deposit $25. Haskell Considine Haskell, 612 Hulett Bldg., archts. CD 1/10/44.

SOON LETS CONTRACT

▲ Calif., Los Angeles—OFFICE—Gershon-Scott Corp., c/o Stiles Clements, archt., Van Nuys Bldg., soon lets contract 10 story reinf.-con. office, $1,500,000. CD 6/20.

Conn., Ramden—CONVENT, etc.—Missionary Zelatrus of The Sacred Heart, Ramden, soon lets contract 5 story convent and school, Cherry Hill, $750,000. Polak & Sullivan, 1399 Chapel St., New Haven archts.

▲ Mass., Boston—HOSPITAL—N. E. Deaconess Hospital, 1e Deaconess Rd., soon lets contract 10 story, brick, steel, 1,000,000 cu. ft. bldg., $3,500,000. Coolidge Shepley, 1 Court St., archt., Bulfinch, Abbott, Gilbert Small & Co., Inc., 10 State St., engr.

Wis., Racine—HOSPITAL—St. Luke's Hospital, 1401 College Ave., soon lets contract hospital addn., nurse's home, $500,000. Schmidt, Garden & Erickson, 104 S. Michigan St., Chicago, 3, Ill., archts. Bids 6/14 rejected. CD 5/23.

Wis., Superior — SCHOOL — Catholic Congregation of Sacred Heart of Jesus, Superior, soon lets contract 3 story part bsmnt., 66x132 ft. steel, brick, cut stone school, $500,000. Plans deposit $20. Hansen & Dobberman, 205 Telegram Bldg., archts. Chas. Foster, 316 Medical Arts Bldg., Duluth, Minn., engr. CD 12/14/48.

LOW BIDDERS

▲ D. C., Wash.—OFFICE—National Assn. of Letter Carriers, 2525 H St., N. W., office, from Curtis Builders, 1406 M St. N. W., $1,238,000. CD 6/4. CD 8/27.

Fla., Surfside—HOTEL—Codadale Corp., c/o Wm. E. Kotte, Archt., 1632 Pennsylvania Ave., Miami Beach, Aug. 11, hotel, from Taylor Constr. Co., 2875 N. W. 42 Ave., Miami, $630,000. CD 8/20.

Ky., Lexington—HOSPITAL—Good Samaritan Hospital, 210 S. Limestone St., Aug. 2, 5 story, bsmnt., 48x129 ft. brick hospital addn., from Grayson Jones Constr. Co., 901 E. Third St., $748,130. Est. $750,000. CD 7/20.

CONTRACTS AWARDED

Calif., Bellflower—DWELLINGS—Ajax Lakewood Co., 3221 Independence Ave., South Gate, 159 stucco dwellings, 162, 163, 164 and 165 Sts., Owner builds, $990,000. Caldwell & Mason, Long Beach, archts.

Calif., Duarte—DWELLINGS—Zenith Development Co., 2961 Fairfax Ave., Los Angeles, 103 frame, stucco dwellings, Bloomdale St., Maynard and Fermley Drs., to Bell Constr. Co., 2961 Fairfax Ave., Los Angeles, $659,050.

Calif., East Los Angeles—DWELLINGS—Jaran Homes, Inc., 9434 Long Beach Blvd., South Gate, 111 stucco dwellings, Blackwood, Woods, Van Couver Aves., Owner builds, $856,910. Hugh Gibbs, 441 E. 1 St., Long Beach, archt.

Calif., Pico—DWELLINGS—Broadfield Square, Inc., 737 N. Highlands Ave., Los Angeles, 81 stucco dwellings, Pocono Blvd., Lemoran, Kilgarry and Citronelle Ave., Owner builds, $583,900. Paul Duncan & Davis Friedman, 4823 Laurel Canyon Blvd., Los Angeles, archts.

Calif., Rivera—DWELLINGS—Walk Corp., 945 N. La Cienga St., 97 stucco dwellings, Fridson St., Arliv Ave., La Docena Lane, Charlsworth Dr., Owner builds, $573,520. Frank Green, 1515 E. Chevy Chase St., Glendale, archt.

Calif., Santa Maria—DWELLINGS—Vern R. Huck, 3021 Rowena Ave., Los Angeles, 85 frame, stucco dwellings in Mariposa Park Dist., Owner builds, $850,000.

Calif., Torrance—DWELLINGS—Wagner Constr. Co., 3334 S. Robertson Blvd., Beverly Hills, 90 frame, stucco dwellings, Crenshaw Blvd. and 164 St., Owner builds, $720,000. Hugh Gibbs, 441 E. 1 St., Long Beach, archt.

▲ Calif., Whittier—DWELLINGS—Colima Homes, Inc., 739 N. Highland Ave., Los Angeles, 276 frame, stucco dwellings in Tracts 16722 and 24375, Owner builds, $1,656,000. Herman C. Light, 7551 Melrose Ave., Los Angeles, archt.

Fla., Hallandale—CLUB HOUSE Gulfstream Race Track, c/o Robert M. Little, 2180 Brickell Ave., Miami, club house to Caldwell-Scott Eng. & Constr. Co., 1340 S. 24 St., Fort Lauderdale, $566,666. Bids 7/31 CD 7/19.

▲ Ga., Savannah—APARTMENT—Savannah Apartments, c/o contractor, apartment, to Lang Constr. Corp., 32 Mt. Pleasant St., Charleston, S. C., approx. $2,000,000.

▲ Ill., Chicago—RESIDENCE HALL—Moody Bible Institute, 153 W. Institute Pl., 10 story, reinf.-con., brick, stone Houghton Residence Hall, to A. L. Jackson Co., 261 E. Erie St., Zone 11, $1,000,000. Bids 7/12, awarded 8/8. CD 7/5.

▲ Ill., Chicago—APARTMENT—Carl Shparago, 5208 W. Congress St., Zone 44, 14 story, bsmnt., apartment, 70 Pl. and South Shore Dr., Zone 49, to Frank A. Schmidt Constr. Co., 9200 S. Cottage Grove Ave., Zone 19, $2,000,000. Awarded 8/10.

Ill., Quincy—HOSPITAL—Blessing Hospital, Broadway and 10 Sts., July 26, 4 and 5 story, 210,000 sq. ft., steel, concrete, brick hospital addns., alterations, from Lloyds Builders, Inc., 61 W. Superior St., Chicago, Zone 10, $975,000. CD 7/19.

▲ Ind., Indianapolis—APARTMENT—Warner & Kanter, Corner Bldg., Birmingham, Ala., 14 story, 390 unit Essex House apartment, Pennsylvania and Vermont Sts., to J. L. Simmons Co., 185 Wabash St., Chicago, Ill., $4,000,000. CD 5/15.

Ky., Louisville—SEMINARY—Catholic Arch Diocese of Louisville, 2 and 3 story solid brick, stone St. Thomas Seminary, 2 wings and gateway, near here, to F. W. Owens Co., N. 5 St., $991,000. Bids 8/2 awarded 8/10. CD 7/20.

Ky., Louisville—SCHOOL—Diocese of Louisville, arch Bishop John Floersch, S. Third St., Zone 3, brick, load bearing tile, reinf. con. school and gymnasium for Loretto Academy, to Al J. Schneider, 7 St. Rd., Zone 7, $550,000. Awarded 8/4. F. J. Nolan & Sons, Kentucky Home Life Bldg., archts.

Ky., Louisville—RESIDENCES—S. Leroy Highbaugh, Jr., 509 W. Market St., one hundred twenty-five 25x28 ft. frame residences, Longfield, Ciara, Glendale and Powell Aves., own forces, $702,000. CD 2/16.

Me., Fort Kent—HOSPITAL—Peoples Benevolent Hospital, First National Bank, 81 Main St., 2 story, bsmnt., brick hospital, to Granger Constr. Co., Inc., 306 Main St., Worcester, $978,000. Bids 8/2, awarded 8/7. CD 5/19.

▲ Mass., Framingham—SHOPPING CENTER—National Suburban Centers, Inc., 84 State St., Boston, regional shopping center, Worcester Turnpike, Rte. 9, to George R. H. Macomber Co., 19 Milk St., Boston, $5,145,000. Ketcham Gina Sharp, 224 E. 44 St., New York, N. Y., archt., Kenneth C. Welch, Frederick Adams, Sidney Shurcliff, 14 Beacon St., Boston, consultants.

▲ Mich., Pontiac—HOUSING—Bloomfield Terrace Corp., 15529 Woodrow Wilson St., Detroit, brick, 104 family unit housing, 10 terrace proj., Fulton St., Owner builds, $1,100,000.

▲ Minn., St. Paul—HOUSING—Rose Vista Corp., J. Bouthillet, pres., 1550 W. Larpenteur Ave., general contract brick, stucco, nine 1-shape bldgs. to contain 10 apartments each, five rectangular bldgs. to contain 10 units each, three row houses to contain 6 units each, 40 garages, to Sauers Constr. Co., 1550 W. Larpenteur Ave., Total est. $1,300,000. Technico, Inc., 1550 W. Larpenteur Ave., archt.

▲ N. J., Rutherford—APARTMENT PROJECT—Hasting Gardens, c/o Erwin Gerber, archts., 1180 Raymond Blvd., Newark, 364 family garden apartment on 21 acre site on Hastings, Darwin and Vendenburgh Aves., Owner builds, $2,500,000.

▲ N. Y., New York—OFFICE—260 Madison Ave. Corp., c/o Sylvan Bien, archt., 565 Fifth Ave., New York, Zone 17, 21 story office, Madison Ave. from 38 to 39 Sts., to Hegeman Harris Co., Inc., 220 E. 42 St., New York, Zone 17. Approx. $9,000,000.

N. Y., Rosedale—SCHOOL—St. Clare Roman Catholic Church c/o F. J. Berlenbach & Sons, archts., 132 Court St., Brooklyn, Zone 2, 3 story school at Brookville Blvd., and 138 St., to Sofaer & Bros. Building Co., 161-19 Jamaica Ave., Jamaica, Zone 3. $625,000. CD 5/26.

Pa., Upper Darby—APARTMENT HOUSE—Ralph Bodek, 14th Long Lane, apartment house, separate contracts. $500,000. William T. Allison, Malvern, Pa., archts. CD 2/28.

▲ R. I., Providence—HOSPITAL—Roger Williams General Hospital, 825 Chalkstone Ave., 165 to 205 bed hospital addn., to E. Turgeson Constr. Co., 42 Weybosset St., $771,538. Bids 8/8. CD 8/4.

S. C., Anderson—APARTMENT UNITS—Dr. W. S. Durham, 1427 Pickens St., Columbia, 100 apartment units, Owner builds. $500,000.

S. C., North Charleston—APARTMENT DEVELOPMENT—Governor Yemans Apartments Inc., Thomas C. Stevenson, Jr., N. Charles St., Charleston, apartment development, Owner builds. $650,000.

Tex., Houston—DWELLINGS—Atlantic Building Corp., 1200 Givens St., Unit 5, 75 dwellings, Owner builds. $645,000. CD 3/9.

Tex., Houston—DWELLINGS—C. O. Beeler, 2400 Pease St., 15 addnl. dwellings, Owner builds. $550,000. CD 5/24.

Tex., Lubbock—DWELLINGS—Urban Development Corp., c/o Sam Lemons, Lubbock, 100 addnl. dwellings, Owner builds. $610,000. CD 6/23.

Tex., Pasadena—DWELLINGS—George W. Batten Co., 1620 Mo. St., Houston, 160 addnl. dwellings, Owner builds. Approx. $760,000. CD 3/2.

Tex., Pasadena—DWELLINGS—Corporation c/o H. Tatar, c/o Lumber Co., 7710 Bowie St., Houston, 75 addnl. dwellings, Owner builds. Approx. $740,000. CD 4/28.

▲ Va., Richmond—BANK—Federal Reserve Bank of Richmond, 9 and Franklin Sts., 6 story bank addn., to George A. Fuller Co., Muesy Bldg., Wash., D. C. $2,034,450. Taylor & Fisher, 1012 N. Calvert St., Baltimore, Md., archts.

▲ Wis., Appleton—OFFICE—Aid Assn. of Lutherans, Appleton, 10 story, basmt., 80x152 ft., steel, brick office, to Turner Constr. Co., 104 W. Adams St., Chicago, Ill., Est. $2,250,000. Bids 8/3. CD 8/2.

Alaska, Fairbanks—APARTMENTS—J. R. Dixon, et al, Fairbanks, two bldgs. for 64-unit apartment, dbl. labor, $550,000. Phileo Eng. Service, Fairbanks, archts. CD 3/16.

▲ Ont., Ottawa—DWELLINGS—George Lyon, 21 Bowesville Rd., 145 dwellings on 45 acre site, just over Ottawa City limits, to Lyon Development Corp., 21 Bowesville Rd. Approx. $1,180,000. CD 6/17/49.

▲ Que., Quebec City—COMMERCIAL—M. Pollock Realty Co. Ltd., 75 St. Joseph St., 5 story, basmt., 18 ft. square, rein.-con. brick block commercial bldg., Charest Blvd. and Bridge St., to Anglin-Norcross Quebec Ltd., 698 Sherbrooke St. W., Montreal. Approx. $1,000,000. CD 5/10.

INDUSTRIAL BUILDINGS

BIDS ASKED

La., New Orleans—WAREHOUSE—B.A. About 9/1—American Radiator & Standard Sanitary Corp., 846 Baronne St., 45,000 sq. ft. warehouse, Theo L. Perrier, Carondolet Bldg., archt. CD 3/14.

Tenn., Jefferson City—WAREHOUSE, etc.—B. A. 9/2—Appalachian Electric Co-operative, Jefferson, warehouse and office, Blanchill, Palm & Purnell, 501 Cherry St., Chattanooga, archts. CD 7/29, under LB.

SOON LETS CONTRACT

▲ Ill., Broadview—PLANT—International Harvester Co., 180 N. Michigan St., Chicago, Zone 1, soon lets contract 1,100,000 sq. ft. steel, concrete, brick, parts depot and machine transfer plant, 17 Ave. at Illinois Central R. R. tracks. $5,500,000.

LOW BIDDERS

▲ Pa., Pittsburgh—PLANT—Reuk McJunkin Dairy Co., 1345 Forbes St., 1 and 2 story, 217x241 ft., brick, block, ice cream plant, from Crump, Inc., 4031 Bigelow Blvd. Approx. $1,500,000. CD 7/17.

CONTRACTS AWARDED

▲ Fla., River Junction—GENERATING PLANT—Gulf Power Co., Pensacola, 50,000 hp. steam-electric generating plant, Owner builds. $4,000,000.

Ill., Chicago—PLANT—H. C. Christians Co., 1325 W. 15 St., 2 story, basmt., 77,000 sq. ft. process plant, to Frevol-Smedberg, 5807 W. Chicago St., Zone 51. $600,000. Bailey & Childs, 231 S. La Salle St., Zone 4, engrs. CD 6/14, under LB.

▲ Ill., Cicero—FACTORY—Goss Printing Press Co., 5th Ave. and 31 St., 400,000 sq. ft. steel, concrete, brick factory, to Sherman Olsen, Inc., 600 W. Jackson St., Chicago, Zone 6. $4,000,000. Nelle, Fich & Bladen, 431 S. Dearborn St., Chicago, Zone 4, engrs. CD 8/8.

Ind., Jeffersonville—WAREHOUSE—Colgate Palmolive Peet Co., Jeffersonville, 200x107 ft. warehouse, to Strack Constr. Co., 147 N. Clay St., Louisville, 2, Ky. Approx. $925,000. Bids 7/25 awarded 8/9. CD 8/11, under LB.

▲ Tex., Baytown—REFINERY—Humble Oil & Refining Co., Baytown, 5th pipe still at refinery, to Foster-Wheeler Co., 165 Broadway, New York, N. Y. Approx. $2,225,000. CD 12/28/49.

▲ Utah, Garfield—REFINERY—Howe Sound Co., 730 Fifth Ave., New York, 19, N. Y., cobalt refinery, to Utah Constr. Co., 57 E. South St., Salt Lake City, Approx. $1,200,000.

▲ N. S., Louisburg—PLANT—Louisburg Fisheries, Ltd., Louisburg, rein.-con., structural steel fish processing plant, incl. freezer, fish meal, boiler house and stack, receiving bldg. on wharf, to Foundation Maritime Ltd., 135 Lower Water St., Halifax, Approx. $1,000,000. Bids 7/20. CD 7/21.

Ont., Toronto—FACTORY—A. E. Long & Co., Ltd., 237 Gerrard St. E., 1 story, brick, steel factory, Bermondsey and Cranfield Rds., to Bennett-Pratt Ltd., 5 Maple Leaf Dr., Weston, Approx. $300,000. Bids 7/17. CD 7/13.

Ont., Welland—PLANT—Joseph Stokes Rubber Co. Ltd., Bernard St., 1 story, 110x193 ft., concrete, steel brick plant structure finishing inspection and shipping bldg., to Robertson Constr. & Eng. Co. Ltd., 512 Clifton St., Niagara Falls. Approx. $275,000.

UNCLASSIFIED

BIDS ASKED

† Colorado—TRANSFORMERS, etc.—B.A. 8/29—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., three phase power transformers for Pole Hill and Flatiron Power Plants, Colorado-Big Thompson, Spec. 3106. Extended date. CD 8/2.

Kansas—RURAL DISTRIBUTION LINES—B.A. 8/24—Co-operative Power & Light Co., Iola, 96.9 mi. rural distr. lines and 31.75 mi. conversion in Coffey, Anderson, Woodson, Allen and Neosho Counties. $200,000. Frank Horton & Co., Lamar, Mo., engrs. CD 5/9.

Nebraska—RURAL DISTRIBUTION LINES—B.A. 8/29—Panhandle Rural Electric Membership Assn., Alliance, 62.14 mi. rural distr. lines, in Box Butte, Grant and Sheridan Counties. $70,000. Raymond H. Reed & Co., Columbus, engrs. CD 9/4/47.

Fla., Jacksonville—FUEL LINE, etc.—B.A. 8/30—At office Com. E. J. Peltier, O CC, Bldg. 902, N. AS., addnl. 10 in. fuel line, installing gasoline pump station and making changes in existing pipe sys., at Naval Bulk Petroleum Fuel Terminal, Spec. 25188. Plans deposit $10. CD 9/8.

Kansas—RURAL DISTRIBUTION LINES—B. A. 8/30—N. C. K. Electric Co-operative, Inc., Glenn B. Snapp, pres., Belleville, 230.6 mi. rural distr. lines in Clay, Cloud, Jewell, Republic and Washington Counties, Proj. Kansas 29 G Republic. Plans deposit $10. Raymond H. Reed & Co., 2305½ 13 St., Columbus, engrs.

La., Baton Rouge—FIRE ALARM HEADQUARTERS, etc.—B.A. 8/30—City, City Hall, fire alarm headquarters bldg. and drill tower. Plans deposit $20. Bodman & Murrell, Raymond Bldg., archts.

Que., Lauzon—DOCK—B.A. 8/30—Acting Secy. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., Lorne Graving Dock extension, Levett Guide Pier. Approx. $100,000. Plans deposit $50. R. Blais, c/o owner, engr.

Que., Petite Riviere St. Francois—WHARF REPAIRS—B.A. 8/30—Acting Secy. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., wharf repairs. Approx. $47,000. Plans deposit $20. R. Blais, c/o owner, engr.

Fla., Sanford—STADIUM—B.A. 8/31—City, athletic stadium $160,000. Plans deposit $25. Extended date. Elton J. Moughton, Sanford, archt. CD 5/19.

† N. Y., Port Washington—TEMPORARY FACILITIES—B.A. 8/31—Dist. P. Wks. Office, Third Naval Dist., Federal Office Bldg., 90 Church St., New York 7, N. Y. temporary facilities, Special Devices Center, Sands Point, Spec. 25177. Plans deposit $10.

Wis., Milwaukee—STADIUM IMPRVS.—B.A. 8/31—Milwaukee Co., Court House, grading, installing subdrainage and water lines, and topsoiling stadium. Plans deposit $5. E. A. Howard, c/o owner engr. CD 2/28.

Colorado—RURAL DISTRIBUTION LINES—B.A. 9/1—K. C. Electric Assn., Burlington, 6.33.74 mi. rural distr. lines, 51.57 mi. conversion and 15.07 mi. removal in Kit Carson, Lincoln and Cheyenne Counties, $700,000. C-B Eng. Co., 25 S. Grove St., Denver, engrs.

† Idaho Arco—TRANSMISSION LINE—B.A. 9/1—Atomic Energy Comm., Idaho Operations Office, Box 1221, Idaho Falls, 10 mi. 138 kv transmission line. CD 8/14.

Nebraska—RURAL DISTRIBUTION LINES—B.A. 9/1—Loup Valleys Rural Electric Membership Assn., Ord., 237 mi. rural distr. lines in Sherman, Valley, Greeley, Wheeler and Garfield Counties. $250,000. Raymond H. Reed & Co., Columbus, engrs. CD 11/1/49.

Nebraska—RURAL DISTRIBUTION LINES—B. A. 9/1—Niobrara Electric Membership Assn., Hay Springs, approx. 556.5 mi. rural distr. lines in Sioux, Box Butte, Dawes, Sheridan and Cherry Counties, Proj. Nebraska, 92C, D Sheridan. Plans deposit $10. Philip L. Burns, Hay Springs, consult. engrs.

N. J., Port Newark—BOILER PLANT, etc.—B.A. 9/1—The Port of New York Auth., 111 8th Ave., New York 11, N. Y., installing boiler plant, rehabilitating steam heating sys. Bldg. 140 Contr. D & M-102.

† Arizona—California—Nevada—CONTROL EQUIPMENT, etc.—B.A. 9/5—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing del. f.o.b. cars shipping point or f.o.b. cars Boulder City, Nev., relays and control equip. for cubicles for Units A-3, A-4 and A-9, unmounted control equip. for main control board, for main control terminal board addn. for 3 unit auxiliary control boards for Units A-3, A-4 and A-9, and unmounted relays and equip. for one Arizona-Nevada-Switchyard relay board for Hoover Power Plant, Boulder Canyon Proj., Spec. 3154. L. N. McClellen, ch. engr.

† New Mexico—LIGHTNING ARRESTERS, etc.—B.A. 9/5—Bureau Reclamation Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., lightning arresters for Albuquerque sub-station, L. N. McClellan ch. engr.

▲ Louisiana—NATURAL GAS PIPE LINES—Bids Asked—United Gas Pipe Line Co., 1525 Fairfield St., Shreveport, several small gas lines radiating from main line of TGTC to communities, $600,000*** 26 mi. 18 in. natural gas line from fields adjacent Mansfield to coast, and appurtenances, $1,742,000*** 90 mi. 16 in. natural gas line from West Mayfield to New Orleans, $2,400,000, A. D. Greene, c/o owner engr. CD 9/1/49.

† Oregon—SHOEFLY TRACK, etc.—B.A. 9/6—U. S. Eng., Pittock Block, Portland, constr. shoefly track on Southern Pacific R. R. line 12 mi. upstream from Lowell, Lane Co., CIVENG-35-026-51-26. Co. D. S. Burns, Pittock Block, Portland, engr.

Texas—HEADQUARTERS—B.A. 9/6—Kaufman County Electric Co-operative, c/o Pratt Spence, mgr., Kaufman, headquarters bldg., Kaufman Co. $70,000. Plans deposit $10. Wyatt C. Herrick Co., 2005 First National Bank Bldg., Fort Worth, archts. CD 9/2/49.

† New Mexico and Texas—MOUNTING, etc.—B.A. 9/7—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing del. f.o.b. cars at shipping or f.o.b. cars at Hatch, N. M., mounting, horn gap switch with manually-gang-operated grounding blades for Elephant Butte-Deming, 115-kilovolt Transmission Line No. 2, Rio Grande Proj., Spec. 3147. L. N. McClellan, ch. engr.

SOON LETS CONTRACT

Pa., Phila.—STEAM DISTRIBUTION SYSTEM—United Engineers & Constructors, Inc., engrs., 1401 Arch St., Phila., soon lets contract steam distr. sys., for University of Pennsylvania, 204 S. 31 St., Approx. $250,000.

Wyoming and Nebraska—RURAL DISTRIBUTION LINES—Niobrara Electric Assn., Lusk, soon lets contract constr. 463.51 mi. rural distr. lines, Niobrara, Goshen, Platte and Sioux Counties, Wyo. and Neb. $500,000. C-B Eng. Co., 25 S. Grove St., Denver, Colo., engr. CD 8/10, under LB.

LOW BIDDERS

▲ Ala., Huntsville—NATURAL GAS SYSTEM—City, Aug. 7, natural gas sys., from P. A. Buchanan Contg. Co., 639 Woodward Ave. S. W., Birmingham. $1,038,173. CD 7/27.

Mass., Waltham—SWIMMING POOL—Commonwealth of Mass., 20 Somerset St., Boston, Aug 8, swimming pool and bathhouse from O'Malley & Delaney, 108 Elm St., $178,629. CD 8/4.

Minnesota—RURAL DISTRIBUTION LINES—Carlton County Co-operative Power Assn., Kettle River rejected bids July 21, 152 mi. rural distr. lines in Carlton Co. and area. L. B. $212,503. Will readvertise CD 8/3.

▲ N. C., Morehead City—OCEAN TERMINAL—State Port Auth., A. W. Gullette, exec. dir., Wilmington, Aug. 10, ocean terminal, from T. A. Loving Co., Bank of Wayne bldg., Goldsboro. $1,898,534. CD 7/10.

Texas—RURAL DISTRIBUTION LINES—Nueces County Electric Co-operative, Inc., Robstown, Aug 14, rural distr. lines, etc. Tex. 88, in Nueces, Kleberg, Kenedy, Jim Wells, Duval, Live Oak and McMullen Counties, from R. D. Cooper Constr. Co., P. O. Box 1763, Baton Rouge. $297,544. Est. $365,000. CD 7/31.

CONTRACTS AWARDED

Kentucky—RURAL DISTRIBUTION LINES—Fleming-Mason Electric Co-operative, Flemingsburg, 227.21 mi. rural distr. lines in Lawrence, Carter, Rowan, Elliott and Greenup Counties, Proj. Ky 5281, to Killoren Co., Appleton, Wisc., $308,460. Bids 6/21. CD 6/7.

La., Rosedale—NATURAL GAS SYSTEM—City, natural gas sys. in Bolivar Natural Gas Dist., to B. & M. Constr. Co., Jackson, $182,000. Bids 8/7.

▲ Md., Baltimore—PIER IMPRVS.—Carton Co., D. A. Lindley, 300 Water St., Canton Ore Piers Imprvs., incl. renovation to midernize existing pier, width of apron addn., loading hoppers, conveyor sys., separate contracts, $1,000,000. Hewitt Robbins, Inc., 370 Lexington Ave., New York, N. Y., engrs.

Minnesota—RURAL DISTRIBUTION LINES—Northern Electric Co-operative Assn., Virginia, approx. 123 mi. rural distr. lines in St. Louis Co. and approx. 29 mi. transmission line St. Louis Co. to Hermans & Braatz, Schofield, Wis., $226,736. Bids 6/30 CD 6/14.

Missouri—RURAL DISTRIBUTION LINES—Grundy Rural Electric Co-operative, Edward Gaither, mgr., Trenton, 321.50 mi. rural distr. lines in Harrison, Mercer, Grundy, Sullivan, Daviess, Putnam and Livingston Counties, Proj. Mo. 44 S Grundy, to A. A. Electric Co., Cicero, Ill. $405,469. Frank Horton & Co., Lamar, engrs. Bids 8/1 CD 7/1.

Proposal Advertisements see pp. 84 and 85

OFFICIAL PROPOSALS

RATE: THE RATE FOR OFFICIAL PROPOSAL ADVERTISING IS $1.00 PER LINE (OR FRACTION) PER INSERTION.

COPY RECEIVED UP TO 3:00 P. M. FRIDAY FOR ISSUE OUT FOLLOWING THURSDAY SUBJECT TO SPACE OPEN FOR LAST MINUTE ADS

SEND COPY TO OFFICIAL PROPOSAL DIVISION, ENGINEERING NEWS-RECORD, 330 W. 42ND ST., NEW YORK 18, N. Y.

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 3151) will be received by Bureau of Reclamation, Grand Junction, Colorado, September 19, 1950, and then publicly opened for furnishing labor and materials and performing all work for the construction of concrete lining, Tunnel No. 3, Station 244+68.83 to Station 277+09.0, Main Canal, Grand Valley Project, Colorado. The work is situated about 2 miles northeast of Palisade, Colorado. Principal items are approximately: 4,500 cu. yds. of concrete in tunnel lining; furnishing and handling 6,600 bbls. cement; and other work. Time allowed for completion will be 150 days. For particulars, address Bureau of Reclamation, Grand Junction, Colorado; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 3155) will be received by Bureau of Reclamation, Building 1-A, Denver Federal Center, Denver, Colorado, September 20, 1950, and then publicly opened for furnishing labor and materials and performing all work for the construction of the Pole Hill Power Plant and access road, Estes Park-Foothills power conduit, Colorado-Big Thompson Project, Colorado. The work is situated approximately 14 miles west of Loveland, Colorado. Principal items are approximately: excavation, 121,000 cu. yds.; reinforcement, 620,000 lbs.; concrete, 4,000 cu. yds.; structural steel, 500,000 lbs.; metal-work, 272,000 lbs.; and other work. Time allowed for completion will be 630 days. For particulars, address Bureau of Reclamation, Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.

(942)

OFFICIAL PROPOSALS

Bids: September 21, 1950 (937)

Pier

PORT OF BOSTON AUTHORITY
CONSTRUCTION OF EAST BOSTON PIER NO. 1
NOTICE TO BIDDERS
PORT OF BOSTON AUTHORITY
SEALED BIDS FOR CONTRACT NO. 7
CONSTRUCTION OF EAST BOSTON PIER NO. 1
ON THE SITE OF EXISTING COMMONWEALTH PIER NO. 1
EAST BOSTON, MASSACHUSETTS

Sealed Proposals will be received by the Port of Boston Authority at its office, Commonwealth Pier No. 5, Boston, Massachusetts, until 2:00 P.M., Eastern Daylight Saving Time on the twenty-first (21) day of September, 1950, at which time and place the bids will be opened publicly and will be read aloud.

The Contract Documents, including Specifications and Drawings, may be examined at the Port of Boston Authority, office of the Chief Engineer, Commonwealth Pier No. 5, Boston, Massachusetts, on and after the twenty-eighth day of August, 1950, every weekday except Saturdays and Holidays between the hours of 9:00 A.M. and 4:00 P.M. Contractors desiring to bid on this work may withdraw Plans and Specifications upon payment of One Hundred Dollars ($100.00) for each set. Deposits will be refunded to Bidders only upon the return of Plans and Specifications in good condition within ten (10) days after the opening of bids.

Each bid must be accompanied by a certified check in the amount of Fifty Thousand Dollars ($50,000.00). A performance bond in the full amount of the contract will be required of the successful bidder.

Attention of bidders is called to the requirements of Chapter 161, Acts of 1925, as to conditions of employment to be observed and minimum wage rates to be paid under the contract, to General Laws (Ter. Ed) Chapter 149, as amended by Chapter 480, Acts of 1939, and Chapter 693, Acts of 1941, pertaining to subcontractors and fair competition among bidders on construction, reconstruction, alterations, remodeling or repair of certain public buildings, also to Chapter 7, Sections 22 and 22A of the General Laws as amended by Chapter 453, Acts of 1933, pertaining to a preference in the purchase of supplies and materials, other considerations being equal, in favor, first, of supplies and materials manufactured and sold within the Commonwealth, and, second, of supplies and materials manufactured and sold elsewhere in the United States.

The right is reserved to waive any informalities in or to reject any or all bids. The contract is subject to the approval by the Governor and Council.

PORT OF BOSTON AUTHORITY
By James R. Nolen, Chairman

Bids: September 16, 1950 (939)

Interceptor Sewer

Sealed bids are invited by the Town of Fairfax, Virginia, address to Robert R. Walker, Mayor, to be opened and read in public at 10:00 A.M. Daylight Savings Time, September 18th, 1950, for the construction of

10,293 Lin. Ft. of 18" Interceptor Sewer.
4,240 Lin. Ft. of 15" Interceptor Sewer.
2,820 Lin. Ft. of 10" Interceptor Sewer.
4,397 Lin. Ft. of 8" Interceptor & Lateral Sewers.
1,302 Lin. Ft. of 8" C. I. Class 150 Force Main.
Complete Sewage Treatment Plant (0.50 MGD).
Remodeling & Re-equipping existing Sewage Pumping Station.
730 V. F. Concrete Block Manholes at an average of 250 Lin. Ft. Intervals.
Concrete Cradle required where depth of backfill exceeds crushing strength of pipe.
Concrete Encasement required where sewer crosses under streams or highways.

The Bidder will be required to furnish a Bidders Bond in the cash amount of 5% of his total bid for each of the sections on which he tenders a bid.

On award of contract, the Bidder will be required to provide bond in the amount of 100% of the total contract price to guarantee the payment of all labor, materials, equipment, etc. and the full performance of contract, also a maintenance bond for a 12 months period in the amount of one half the construction cost.

On award of contract, the Bidder will be required to provide Public Liability and Property Damage Insurance.

Only bids from Contractors, registered in their respective states, will be received.

The Town reserves the right to reject any and all bids.

A TWENTY DOLLAR ($20.00) check or money order for each will be required for each set of contract documents, which may be had by writing or wiring G. Hubard Massey, Fairfax, Virginia. No refund will be made.

By authority of the Town Council, at its regular meeting, on August 2nd, 1950.

Bids: September 6, 1950 (928)

Miscellaneous Work at Airport

CITY OF NIAGARA FALLS, NEW YORK
OFFICE OF THE CITY MANAGER

Sealed proposals will be received by the City Manager of the City of Niagara Falls, New York, at his office in the City Hall until ten (10) o'clock A.M., Daylight Saving Time Sept. 6, 1950, at which place and hour they will be publicly opened and read, for the following work at the Niagara Falls Municipal Airport:

a. Construction of traffic control tower.

b. Installation of electric utilities and interior wiring in traffic control tower.

c. Installation of all mechanical utilities including plumbing, heating, ventilation, and air conditioning, in traffic control tower.

d. High intensity lighting system and controllable wind tee.

Bids may be submitted for one or more of the Schedules or for all of the Schedules.

The contract documents, including plans and specifications, may be examined at the office of the City Engineer in the City Hall and copies may be obtained upon deposit of twenty (20) dollars per set. The amount of the deposit will be remitted if the unused documents are returned in good condition not later than thirty (30) days after the opening of bids.

Each bidder must deposit with his bid, a certified check payable to the order of the City Clerk, Niagara Falls, New York, in an amount not less than five (5) per cent of the amount bid, subject to the conditions provided in the "Instructions to Bidders."

The successful bidder will be required to furnish a performance bond in form and substance and with sureties approved by the City in a sum equal to the full amount of the contract awarded. Such performance bond shall guarantee faithful performance of the contract and the payment of all labor, materials, and equipment costs. The bond shall be executed by a duly authorized surety company as surety.

The City reserves the right to reject any or all bids, or any part of a bid and to waive any informalities and technicalities in the proposals.

Dated Aug. 8, 1950.

Charles W. Collison,
Acting City Manager

(Continued on page 85)

Contractors Watch This Section —

for new projects. Publish your announcements through the proposal sections of *Engineering News-Record* and get their bids.

U. S. Government
(Continued from page 84)

GOVERNMENT OF THE DISTRICT OF COLUMBIA, DIRECTOR OF SANITARY ENGINEERING, D. C., August 9, 1950. SEALED PROPOSALS will be received in Room 508, District Building, 14th and E Streets, N. W., Washington 4, D. C., until 2:00 p.m., Daylight Saving Time, September 15, 1950, and then publicly opened and read for SLUDGE DRYING AND INCINERATING EQUIPMENT, SEWAGE TREATMENT PLANT, Washington, D. C. Proposal forms, specifications and drawings may be obtained in the office of Chief Clerk, E. D., Room 427, District Building (Telephone National 6000, Extension 2378), upon the deposit of a certified check, in the amount of Fifty Dollars ($50.00) for each set, made payable to the Collector of Taxes, D. C. (929)

OFFICIAL PROPOSALS

Bids: October 20, 1950 (898)

Construction of Insular Psychiatric Hospital

GOVERMENT OF PUERTO RICO
DEPARTMENT OF THE INTERIOR
BUREAU OF BUILDINGS
SANTURCE, PUERTO RICO

Sealed proposals will be received by the Commissioner of the Interior of Puerto Rico at his office, Santurce, Puerto Rico, until 2:00 P.M. on October 20, 1950, and then be publicly opened and read aloud, for furnishing all plant, labor, and materials and performing all work required for THE CONSTRUCTION OF VARIOUS BUILDINGS FOR THE INSULAR PSYCHIATRIC HOSPITAL AT RIO PIEDRAS, PUERTO RICO.

Prospective bidders may submit bids for any one or all or any combination of the following Contract Areas as indicated on the Site Plat:

Contract Area I
1—Building "A"—Administration and Reception Building
Contract Area II
1—Building "B"—Tuberculosis Building
Contract Area III
1—Building "C"—Chronic Disturbed Building—Men
2—Building "D"—Chronic Disturbed Building—Women
3—Building "E"—Industrial Patients Building—Men
4—Building "G"—Industrial Patients Building—Women
5—Building "H"—Industrial Patients Building—Women
6—Building "J"—Inactive Patients Building

Plans, specifications, and all pertinent contract documents may be obtained at:

1—Department of the Interior—Santurce, Puerto Rico
2—Office of Puerto Rico, 1926 17th Street, N.W., Washington 6, D.C.
3—Office of Puerto Rico, 1881 Broadway, New York, N. Y.

upon deposit in cash, money order, or certified check payable to the Commissioner of the Interior of Puerto Rico in the amount or amounts indicated below:

1. Complete Plans and Specification, $225.00; 2. Architectural Section & Specification, $90.00; 3. Structural Section & Specification, $55.00; 4. Mechanical Section & Specification, $80.00.

The full amount of the deposit or deposits will be refunded to the depositor upon return of the above documents in good condition within a period of THIRTY (30) DAYS after the date of the opening of bids.

Each proposal must be accompanied by a provisional bond in cash, bid bond, or certified check payable to the Commissioner of the Interior of Puerto Rico for not less than the amounts indicated in the proposal form.

Special attention is called to the bidders that plans, specifications, and contract documents may be obtained only up to Sept. 30, 1950, and that any bid which does not contain the prices written in letters and figures will be rejected.

The Board of Awards reserves the right to reject any or all bids and to waive informalities.

Engineer's Estimate
Contract Area I $1,050,000.00
Contract Area II 500,000.00
Contract Area III 1,625,000.00

JORGE J. JIMENEZ
Commissioner of the Interior

OFFICIAL PROPOSALS

Bids: September 18, 1950 (926)

Sanitary Sewerage System

EWING-LAWRENCE SEWERAGE AUTHORITY

Sealed bids will be received by the Ewing-Lawrence Sewerage Authority, 156 State Street, Trenton, New Jersey, until 2 o'clock P.M. September 18, 1950 at the Lawrence Township Hall for construction of a sanitary sewerage system in Ewing and Lawrence Townships, Mercer County, New Jersey.

The work to be done includes furnishing the materials and performing the labor for constructing approximately 2,900 feet of 36 inch, 1,400 feet of 33 inch, 7,500 feet of 30 inch, 20,600 feet of 27 inch, 1,800 feet of 21 inch, 3,500 feet of 18 inch, 3,300 feet of 15 inch, 13,000 feet of 12 inch, 30,700 feet of 10 inch and 250,100 feet of 8 inch gravity sewers, 5,900 feet of 6 inch pressure sewers and 43,100 feet of 6 inch house connections. The work is divided into five sections under which it is classified according to its character and location. Bidders will be allowed to bid on one or more sections or on a combination of sections.

Copies of the plans and specifications may be examined and obtained at the office of the Authority or at the office of Buck, Seifert and Jost, Consulting Engineers, 112 East 19th Street, New York 3, N. Y. upon deposit of Fifty Dollars, which will be refunded upon return of the plans and specifications in good condition within 20 days after the date on which bids are received.

Each proposal must be accompanied by a certified check or bid bond from a surety company authorized to do business in New Jersey and satisfactory to the Authority in amount equal to ten percent of the proposal, and by an agreement in writing from a qualified surety company binding the surety to execute the required performance bond in the event the bidder is awarded the contract.

The Authority reserves the right to consider bids for 30 days after their receipt before awarding any contract and to accept any bid or reject any or all of them.

EWING-LAWRENCE SEWERAGE AUTHORITY
By WILFRED F. PREDHOME
Secretary

Bids: August 29, 1950 (924)

Port Jervis Sewerage System

PLUMBING, GAS FITTING, HEATING AND VENTILATING EQUIPMENT CONTRACTS 424 and 425

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York (5), until 10:00 A.M. Eastern Standard Time, on Tuesday, August 29, 1950, for Contracts 424 and 425, for furnishing, delivering, installing and testing plumbing, gas fitting, heating and ventilating equipment for the sewage treatment plant and pumping stations of the Port Jervis sewerage system, in the City of Port Jervis, Orange county, New York, all as set forth in the specifications. Contract 424 will comprise plumbing equipment for the North Street and Neversink pumping stations and plumbing and gas fitting equipment for the sewage treatment plant; Contract 425 will comprise heating and ventilating equipment for the two pumping stations and the sewage treatment plant.

Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., of each contract can be obtained at the office of the Chief Engineer, Room 1311, at the above address, upon application in person or by mail, by depositing the sum of $5.00 in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of $4.00 will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the contract drawings for their own use may secure same, the cost thereof to be paid by them. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President; RUFUS P. McGAHEN, JAMES J. MORAN, Commissioners, Board of Water Supply; RICHARD H. BURKE, Secretary.

OFFICIAL PROPOSALS

Bids: September 7, 1950 (930)

Structural Steel for Stadium

MILWAUKEE COUNTY PARK COMMISSION
Room 308—Court House
Milwaukee, Wisconsin

Sealed bids will be received at this office until 11:00 A. M., Thursday, September 7, 1950 to be opened at 2:00 P. M. of the same day in the County Board committee room before the Highway Committee of the County Board of Supervisors and the Milwaukee County Park Commission for the furnishing, fabrication, and delivery of 2500 tons of structural steel for the Milwaukee County Stadium

in accordance with plans and specifications which will be available at the Milwaukee County Regional Planning Department, Room 303, Court House, after August 22, 1950. A deposit of $5.00 shall be required for all plans taken from the office. The deposit shall be refunded if plans are returned in good condition.

MILWAUKEE COUNTY PARK COMMISSION
August 9, 1950
Jerome C. Bretzka, Executive Secretary

Bids: September 15, 1950 (940)

Sewerage System & Sewage Treatment Plant

NEW CUMBERLAND BOROUGH AUTHORITY
NEW CUMBERLAND, PENNSYLVANIA

Sealed proposals for the construction of a complete sanitary sewerage system, a primary sewage treatment plant, and sewage pumping stations will be received by New Cumberland Borough Authority until 7:30 P.M. E. D. S. T., Friday Sept. 15, 1950, at which time the bids will be publicly opened and immediately read in a meeting of the Authority to be held at the Borough Hall, New Cumberland, Pennsylvania.

The work will be divided into two sections and separate proposals will be received for each portion of the project, as follows:

SECTION NO. I—SANITARY SEWERAGE SYSTEM, consisting of approximately 128,629 feet of pipe ranging in size from 6" to 18", 404 manholes and other appurtenances.

SECTION II—PRIMARY SEWAGE TREATMENT PLANT, including a control building, separate digestion, primary sedimentation tanks, sludge drying beds and other appurtenances, 2 sewage pumping stations, plumbing, heating and electrical work.

Specifications, Proposal Forms, Drawings, and other contract documents may be examined at the office of Ivan M. Glace, Consulting Engineer, Harrisburg, Pennsylvania. A complete set of bidding documents, for either section, may be obtained at the office of the Engineer, upon depositing $25.00 per section. This full amount will be refunded if a bid is submitted and if the documents are returned in good condition within 10 days after the opening of bids. If the documents are not returned within the period, the deposit will be forfeited. No deposit will be returned to non-bidders.

No bid on any of the construction work will be considered unless it is accompanied by the bidder's certified check drawn upon a solvent bank and made payable to the order of the New Cumberland Borough Authority for the sum of $20,000 for the sewerage system; for $10,000 for the sewage treatment plant; or for 10% of the base bid on the pumping stations, plumbing, heating or electrical contracts, which sums will serve as bid security and will be forfeited to the Authority as liquidated damages in the event an award is made and the contracts and bonds are not promptly and properly executed as required in the specifications.

No bidder may withdraw his bid within 30 days after the actual date of the opening.

The New Cumberland Borough Authority reserves the right to reject any or all bids, to waive any technical defects, and to accept any bid that it may deem to be for the best interests of the Authority.

BY ORDER OF THE NEW CUMBERLAND BOROUGH AUTHORITY
VANCE RIGLING, Secretary

Read the Official Proposal Columns of
ENGINEERING NEWS-RECORD
This Week and Every Week

SEARCHLIGHT SECTION

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

ESTIMATORS

Fully experienced in construction and capable of estimating building work, mechanical (machinery, equipment, piping, etc.) or electrical installations. Degree in civil, mechanical or electrical engineering preferred but not necessary.

Openings in Cleveland Office offers lengthy employment with good salary for those qualifying.

Send complete resume stating experience, education, salary requirements and available date to:

THE H. K. FERGUSON COMPANY
Engineers and Builders
Ferguson Building, 1783 East 11th Street
Cleveland 14, Ohio

PROJECT ENGINEER

Wanted — Experienced Construction Engineer for large turbo-generator power plant on East Coast. Must have recent experience in directing operations for complete project, with knowledge of sub-aqueous operations and construction of docks and waterfront facilities. Write giving full particulars of education, experience and salary expected.

P-7108, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

ESTIMATOR

Experienced ENGINEER, familiar with Oil Refinery design and capable of estimating process equipment from flow diagrams.

Give full information, experience record and salary expected.

ARTHUR G. McKEE & CO.
2300 CHESTER AVE.
CLEVELAND 1, OHIO

CONSTRUCTION SUPERINTENDENT

WANTED by large company. Technical graduate, experienced in building & equipment installation. Chemical plant experience preferred. Man must be free to travel U. S. Give age, education, detailed experience, & salary expected.

Write
Box EN 1190, 221 W. 41 St., N. Y. C.

CITY OF DETROIT

Engineers experienced in the design and construction of water works needed for $ 8,000,000 project. Starting salary $4,067, $4,508, $5,436, $6,430 per year with annual increases. Submit resume of experience with application request.

Detroit Civil Service Commission
1501 Water Board Bldg.
735 Randolph Street, Detroit 26, Mich.

ESTIMATOR or COST ENGINEER

wanted for work in Brazil Age 28 to 40. By North American Company which has been building hydro-electric projects in Brazil for past 50 years. First class engineering and construction organization with good opportunities for future. Salary to suit qualifications. In reply state experience and personal status in detail. Reply to

Dept. WHK
Canadian Brazilian Services, Ltd.
Yonge & Gerrard Sts.
Toronto, Ontario, Canada

ADMINISTRATIVE ENGINEER WANTED

The Council of the Village of Richfield, Hennepin County, State of Minnesota, will receive written applications and qualifications for full time engineer in said Village until 8:00 P.M. Monday, September 25, 1950.

Applicants should appear in person at stated time for interview with the Council.

GEORGE SOBERG, Clerk, Village of Richfield

REPLIES (Box No.) Address to office nearest you
NEW YORK 330 W. 42nd St. (18)
CHICAGO 520 N. Michigan Ave. (11)
SAN FRANCISCO 68 Post St. (4)

POSITIONS VACANT

WANTED, SEVERAL engineering graduates under 35, by large industrial fire prevention organization for field work involving periodic inspections and special consulting service. Electrical and chemical engineers preferred. Permanent openings in United States and Canada. P-7287, Engineering News-Record.

CONSTRUCTION COMPANY, operating nationwide, specializing in structural concrete, such as bridge piers and their foundations and mass concrete such as dams, require A No. 1 thoroughly experienced estimator familiar with present-day costs capable of preparing comprehensive and complete estimates. To be considered, complete information must be furnished. Our organization has been advised of this advertisement. P-6974, Engineering News-Record.

DESIGNING ENGINEER experienced in steel and concrete bridges and structures. Must be capable of assuming responsibility. Salary and bonus. Submit complete data on education and experience. P-7191, Engineering News-Record.

ENGINEER, CIVIL, experienced in drafting, quantity estimating, surveying and construction supervision. First class man only. Write 5910 MacArthur Blvd., Washington, D. C.

CONSTRUCTION ENGINEER Supt. Superintendent to take full control of field of heavy concrete and steel bridge, ½ hour from N.Y.C.; must be 40-50 years old and show proof of considerable experience in this type of construction. Please send complete resume giving full particulars of past work and references with permission to check same. Your resume and references will be your only contact with this company, so be sure they are all applications will be held in highest confidence, and papers of unsuccessful applicants will be destroyed. This is an A-1 company who will offer attractive proposition to the right man. Please state past earnings. P-7164, Engineering News-Record.

WANTED: CONSTRUCTION Superintendent for reinforced concrete hospital building in Eastern Pennsylvania. Give experience record, education, age, references and salary desired. P-7480, Engineering News-Record.

CONSTRUCTION PROJECT Managers—Experienced on large scale industrial and commercial construction and waterworks projects. Write giving detailed account of experience over past 15 years. P-7495, Engineering News-Record.

ELECTRICAL POWER Plant Designer — Draftsmen wanted. 12Experience in electrical control design and planning desirable. Location South Atlantic States. P-7485, Engineering News-Record.

MANUFACTURERS' REPRESENTATIVES

Well established firm with sales offices in New York, Philadelphia, Baltimore and Boston now successfully representing national manufacturers desires connection with large steel fabricators and piping fabricators. Must be capable of negotiating contracts up to one million dollars with erection as well as prefabricating facilities in various sections of U. S.

Solid contacts with large contractors, consulting engineers, boiler manufacturers, refineries, etc.

For further information write:

RA-7508, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

POSITIONS VACANT

CONSTRUCTION ENGINEER with 5-6 years' experience for small bridge in South Jersey. Must have car and be willing to relocate. A-1 company with excellent future to man with ability. Send complete resume and references which will be held in strict confidence. Unfurnished apartment will be supplied. P-7466, Engineering News-Record.

POSITIONS WANTED

CIVIL ENGINEER; registered P.E. N.Y. Thirty years executive experience on general construction, highways, airports, municipal improvements, drainage; including fifteen years foreign assignments. Fluent Spanish. Retired (60) from U. S. Engineers. Would consider position as Resident Engineer or Foreign contact Representative. Location immaterial. Responsible credentials. Excellent Health. Presently located New York City. PW-6826, Engineering News-Record.

MASTER MECHANIC, Equipment Supt., Mechanical Operating Engineer, over twenty-five years experience with erection, repair and maintenance of heavy industrial, power house, pumping stations and marine equipment. Desires permanent position. PW-7231, Engineering News-Record.

ESTIMATOR-MANAGER-engineer, 14 years experience on heavy engineered construction; built residential, public commercial & industrial building. Prefers position with contractor handling all types of heavy const. & bldg. const. In reply state salary to be expected. PW-7388, Engineering News-Record.

CONSTRUCTION MANAGER, Project Manager-Graduate CE, P.E., with 20 years experience in all phases of construction work, estimating, purchasing, field supervision. Broad experience on Heavy, General Building and Industrial Plant Construction. Excellent record and references. Permanent connection desired. Available Oct. 1st. Salary $12,000. PW-7391, Engineering News-Record.

CIVIL ENGINEER 26 years engineering experience, design, construction and supervision, in roads, streets, bridges, sewers, etc., desires a change in employment. PW-7464, Engineering News-Record.

GRADUATE CIVIL Engineer, P.E. 33, married, 4 years experience in construction and hydraulics with U. S. Govt., desires field or office position with reliable and progressive firm in heavy construction. Prefer Southwest or Rocky Mountain States. Available after Sept. 15. PW-7398, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT and Estimator desires work in New England. Experienced industrial plants, housing, roads, sewers, docks, bridges, skilled estimator. PW-7405, Engineering News-Record.

CIVIL GRADUATE of 1947 with one year of light construction, two years structural steel detailing and checking, and military experience in electricity and electronics, desires permanent position in construction, design or plant engineering. PW-7444, Engineering News-Record.

COUNTY HIGHWAY Engineer, 46 years experience in all phases of highway design, construction and maintenance. Desires a position as public works superintendent or city manager of small city. PW-7455, Engineering News-Record.

THE AUSTIN COMPANY

Invites Applications From Capable Engineers and Draftsmen

Opportunities are being offered to Engineers and Draftsmen who can design and or prepare engineering drawings for industrial buildings and their facilities. Assignments are not for specific projects but are in our regular engineering staffs in long-established offices located on the East Coast, Central West, Gulf Coast, and West Coast. Good working conditions. Established vacation and sick leave plans, also paid holidays.

Positions are open to men possessing a sound background of education and experience and qualifying in—

DESIGNERS—Office buildings, laboratories, and industrial buildings. Positions require those possessing vision and creativeness.

STRUCTURAL—Industrial buildings and miscellaneous structures of steel and reinforced concrete.

MECHANICAL—Heating, air conditioning, ventilation systems, process piping, conveying systems, plumbing, sewer, and sprinkler systems.

ELECTRICAL—Industrial lighting and power distribution, and controls.

DETAILERS—Draftsmen experienced in the preparation of steel details for shop fabrication of industrial building frameworks.

Full particulars as to education, experience, and compensation desired should be given in first letter.

NATIONAL HEADQUARTERS

16112 Euclid Avenue — Cleveland 12, Ohio

POSITIONS WANTED

HYDROELECTRIC ENGINEER; 50, Graduate C.E. 25 years experience in design, supervision of design and inspection of construction of hydroelectric projects of all types. Desires domestic or overseas position. Knowledge of German, French and Scandinavian languages. Available immediately. PW-7434, Engineering News-Record.

FIELD ENGINEER, industrial construction, layout, private surveys, drafting, computing. PW-7503, Engineering News-Record.

PART TIME WORK WANTED

ENGINEER SKILLED street Designer. Know costs, methods, costs and contracting practices. Registered 4 states. Month or years' work. Box 862, Philadelphia 5, Pa.

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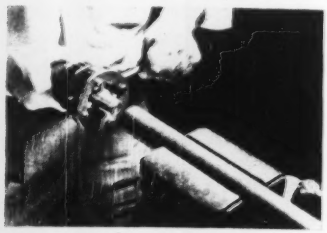
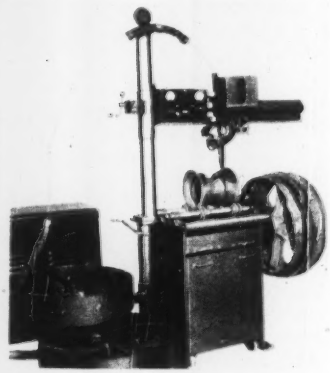


Hand Threading Tool

Portable threading tool is especially recommended for use with Karbate impervious graphite pipe. It eliminates need for extra tools, and speeds on-the-job fabrication of Karbate pipe.—National Carbon Div., Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.



Hard-Facing Welder

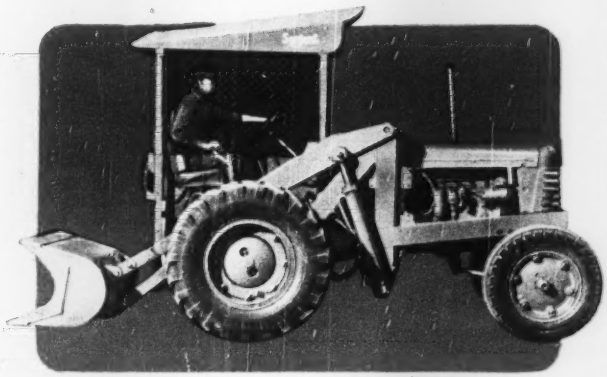
Automatic welding machine is especially recommended for hard-surfacing work. The Leader incorporates a 500-amp ac welder, automatic welding head, and a positioner having accommodations for both horizontal and angular mounting of work. The head handles all sizes and types of automatic wires, and has provision for manual step-over control.—Leader Welding & Mfg. Co., 2418 Sixth St., Berkeley, Calif.

Magnetic Clutch

Controllable coupling transmits torque by utilizing link action of a dry magnetic mixture in a magnetic field between driving and driven parts. Magnetic mixture is composed of iron particles and flake graphite; the magnetic field is established by current flowing through a coil. Advantages include: Small control power with ex-

(Continued on page 96)

Now... *the Most Versatile Loader on Wheels!*

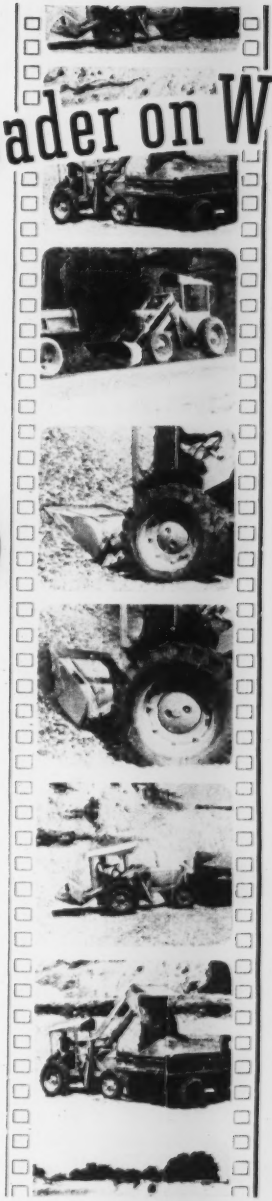


Here's the most versatile, practical loader ever developed for wheel tractors. It can dig in front . . . dump in front like the conventional loader. BUT, it can also dig in *back* and load in *front*.

You can dig in back . . . move straight forward to the truck . . . the bucket swings *straight over* the roof . . . and the load is dumped into the truck. Thus you eliminate the turning necessary with ordinary front end loaders . . . eliminate *half* the gear shifts and *half* the clutch wear. You save time and fuel . . . cut operator fatigue. You speed loader operations . . . *can load at better than a yard a minute.*

You get far greater traction and almost effortless steering with the Strait-Line. Rear-carried bucket load adds needed weight to the rear driving wheels . . . subtracts weight from the front steering wheels. Increased traction plus the new PUSH-TILT bucket with extended loading lips, enables you to get bigger bucket loads. Two levers control all operations.

Add them all up . . . ability to select your type of digging, front or back as the job requires . . . Strait-Line operation with back digging which gives you faster operation, greater traction and easy steering . . . fuller buckets . . . and you'll see where your operations can profit with the Strait-Line. For information and literature, see your Oliver Industrial Distributor or write direct to The OLIVER Corporation, 19300 Euclid Avenue, Cleveland 17, Ohio.



Conventional front digging, primarily used with Strait-Line where unit digs and moves straight ahead to load.

Back digging. Note how extended loading lips easily penetrate the bank.

PUSH-TILT action which lifts cutting edge 20" and thrusts it into bank.

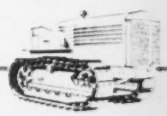
Carrying position—bucket is tilted to retain load and is carried low enough to increase both traction and stability.

Dumping position. Bucket has been carried over the roof and dumps in front.

THE OLIVER CORPORATION

A complete line of industrial wheel and crawler tractors

"FINEST IN INDUSTRIAL MACHINERY"



THE OLIVER CORPORATION

The Sign of Extra Service

REDUCE
TAMPING COSTS!

USE THE
CLECO
NO. 5A AIR-OPERATED
BACKFILL TAMPER

- Full power stroke of the piston gives deeper penetration and faster compaction.
- Rugged heavy-duty construction for long life and low maintenance.
- Light weight and excellent balance for easy handling.

Specify CLECO Paving Breakers, Sump Pumps, Triple Scalers

WRITE FOR BULLETIN 76-B

CLECO DIVISION
of the REED ROLLER BIT COMPANY
5125 CLINTON DRIVE • HOUSTON 20, TEXAS

LOCKED IN STRENGTH of Tri-Lok open steel flooring gives efficient load distribution, even on long spans. Get maximum strength, light, and air with minimum weight. Available in Rectangular, Diagonal, and Super-Safety U-type Flooring, and Stair Treads of all kinds.

The Tri-Lok Company is also equipped to furnish *riveted* and Tri-Forge *welded* open steel flooring. Tri-Lok grating can be furnished in a variety of metals, including aluminum alloy, stainless steel, etc. Write for Bulletin MU1140.

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National Distributor for the Tri-Lok Company
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CONCRETE SURFACER
MODEL A

"Berg"' equipment is used extensively for surfacing and finishing applications on concrete construction.

The many "BERG" Models available, permit exact selection for your particular application.

The distinctive "BERG" features give you the kind of results that are realized in better quality work, combined with lower costs.

"BERG" Heads and Attachments are interchangeable, thereby providing adaptability for vibrating, wire brushing, sanding and polishing applications.

THE CONCRETE SURFACING MACHINERY CO.
4667 SPRING GROVE AVE.
CINCINNATI 32, OHIO

tremely fast response; no wear on torque-transmitting surfaces; torque at zero slip; large maximum-to-minimum torque ratio; and easy adaptation to remote control.—VICKERS ELECTRIC DIV., VICKERS, INC., 1815 LOCUST ST., ST. LOUIS, MO.

Tractor-Mounted Loader

Models 3-AM and 4-AM Shoveloaders can be mounted on tractors equipped with mowers. They are so mounted that the Shoveloader and mower operate independently of each other, and neither needs be removed for operation of the other. The Model 3-AM has an 1,800-lb lifting capacity, a ¾-yd bucket, and a 7-ft 6-in. dumping clearance. The 4-AM has a 2,500-lb capacity, a ½-yd bucket, and an 8-ft 6-in. dumping clearance.—LULL MFG. CO., 3612 E. 44TH ST., MINNEAPOLIS 6, MINN.

Power Maintenance Unit

Machine can be converted into an 8-in. circular saw with extension table, 15-in. vertical drill press, 33-in. lathe, 12-in. disk sander, or horizontal drill press. Accessories permit use of Shopsmith as jointer, shaper, drum sander, mortiser, or other types of power tool.—MAGNA ENGINEERING CORP., 417 MONTGOMERY ST., SAN FRANCISCO, CALIF.

Puller Line Expanded

Addition to Proto line of puller items includes: Bearing separator-puller plate, 14 step-plate adapters, 2 jaws, and 2 screw tips. The separator-puller features flat surfaces and knife-like edges that permit insertion behind gears and bearings where space is limited. The step-plate adapters fit into ends of hollow shafting or hous-

ings and provide a base for a puller screw when forcing bushings, gears, and pulleys. They are also useful for installing oil seals. The new items cover a large range of sizes.—PLOMB TOOL CO., 2209 SANTA FE, LOS ANGELES, CALIF.

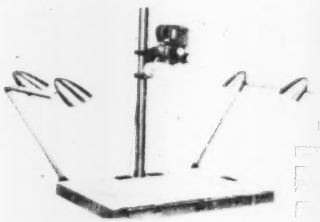


Photo-Copying Unit

Varifile photo-carrying unit permits use of 70-mm roll film, or 35 mm micro-copy film. It features automatic camera operation, plus speed, simplicity, and economy. The 70-mm film produces a 2¼x3¼-in. negative suitable for filing in conjunction with 3x5 file cards. The Varifile uses film magazines which are quickly interchangeable. —PHOTOGRAPHIC PRODUCTS, INC., 6916 ROMAINE ST., HOLLYWOOD 38, CALIF.

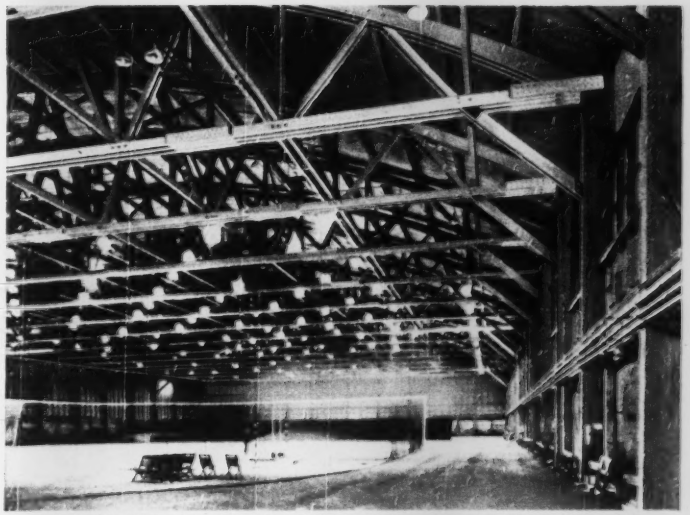
Air Line Lubricator

Automatic lubrication for tools using 10 to 50 cfm is provided by this air line lubricator. Transparent Plexiglas bowl, designed to hold 6 oz. of light oil, provides oil feed through a porous bronze wick. Normally, pressure drop through the lubricator will not exceed 1 psi. Quantity of oil dispensed into the air stream is dependent upon amount of air passing the wick.—KELLER TOOL CO., GRAND HAVEN, MICH.

Trackless Recessed Doors

Flo-Dor trackless unit for recessed doors provides free-floating action without tracks or alignment problems. Door is supported by two angle brackets on the inner edge. Complete installation fits within standard 2x4

(Continued on page 101)



University of Minnesota Field House. Architects and Engineers, C. H. Johnson, Minneapolis.

SPACE by the ACRE

...and not a single obstructing post

CLEAR FLOOR SPACE required for wide span buildings is provided by roof trusses fabricated by Timber Structures, Inc.—at a price to satisfy the smart buyer.

The University of Minnesota field house, for example, contains almost two acres of covered area without an interior post or support of any kind. Fifteen 200-foot Arch Teco bowstring trusses are spaced to make a building 400 feet long. Supporting the trusses are glued laminated columns, 14½" x 22¾" in section, 36 feet in height. Primary framing throughout is of structural timber. Walls are of brick veneer up to the eight-foot level, and incombustible wall panels from there on up to the roof.

Completely Pre-Fabricated for Jobsite Assembly

Precision fabricated at the plant to specifications of the architects and engineers, the trusses, columns and bracing were assembled and erected at the jobsite without cutting, fitting or waste. Result is a highly adequate, long life structure offering low fire risk and exceptionally low cost per square foot.

Timber Structures, Inc. welcomes consultation with architects and engineers on any problem involving post-free construction. Brochure, "Engineering in Wood for Modern School Buildings" may be obtained from the Timber Structures office nearest you or by filling in and mailing the printed coupon.

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BURSTING STRENGTH

Without bursting strength—or, for that matter—without all of the strength factors listed opposite—no pipe laid 100 years ago in *city streets* would be in service today. But, in spite of the evolution of traffic from horse-drawn vehicles to heavy trucks and buses—and today's vast complexity of subway and underground utility services—cast iron gas and water mains, laid over a century ago, are serving in the streets of more than 30 cities in the United States and Canada. Such service records prove that cast iron pipe combines all the strength factors of long life with ample margins of safety. No pipe that is provably deficient in any of these strength factors should ever be laid in city streets. Cast Iron Pipe Research Association. Thos. F. Wolfe, Engineer, 122 So. Michigan Ave., Chicago 3.

CAST IRON PIPE

Strength factors of Long Life !

No pipe that is provably deficient in any of these strength factors should ever be laid in city streets

BURSTING STRENGTH

In full length bursting tests standard 6-inch cast iron pipe withstands more than 2500 lbs. per square inch internal hydrostatic pressure, which proves ample ability to resist water-hammer or unusual working pressures.

SHOCK STRENGTH

The toughness of cast iron pipe which enables it to withstand impact and traffic shocks, as well as the hazards in handling, is demonstrated by the Impact Test. While under hydrostatic pressure and the heavy blows from a 50 pound hammer, standard 6-inch cast iron pipe does not crack until the hammer is dropped 6 times *on the same spot* from progressively increased heights of 6 inches.

CRUSHING STRENGTH

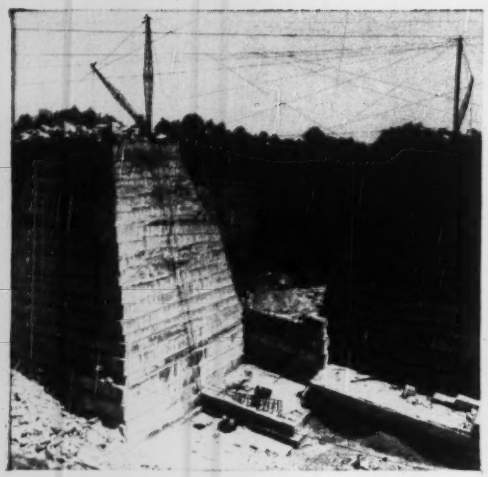
The ability of cast iron pipe to withstand external loads imposed by heavy fill and unusual traffic loads is proved by the Ring Compression Test. Standard 6-inch cast iron pipe withstands a crushing weight of more than 14,000 lbs. per foot.

BEAM STRENGTH

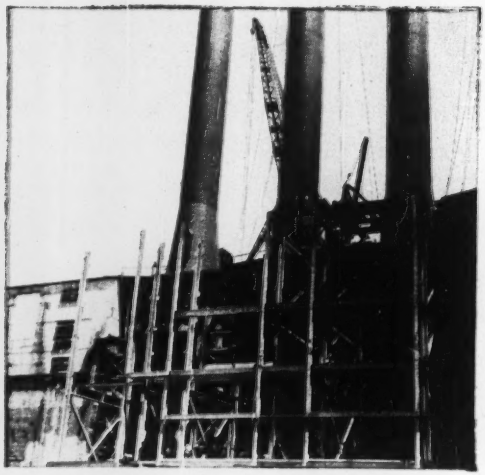
When cast iron pipe is subjected to beam stress caused by soil settlement, or disturbance of soil by other utilities, or resting on an obstruction, tests prove that standard 6-inch cast iron pipe in 10-foot span sustains a load of 15,000 lbs.

CAST IRON

SERVES FOR CENTURIES



Lifting 15-ton blocks of Berea sandstone at the world's largest and deepest sandstone quarry, South Amherst, Ohio. This service is extremely abrasive as the stone is the same type that is used for grinding wheels. The Cleveland Quarries Company has used Tiger Brand Wire Rope on this operation for many years and reports exceptionally good service.

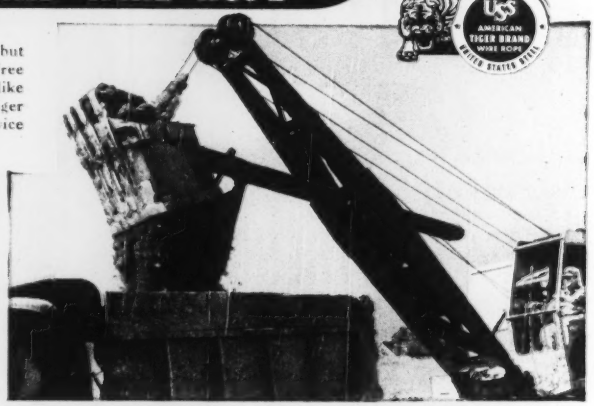


Building a power plant—Wire rope is the connecting link between steel on the ground and steelwork rapidly rising in a new power plant . . . and the longer the rope lasts without time-consuming changes, the more money it makes for the contractor. That's why it pays you to use the best wire rope you can get—TIGER BRAND.

Judge it by the jobs it handles

TIGER BRAND WIRE ROPE

Digging dirt—the commonest of all operations—but tough, too, because the wire rope is never free from grit. Whether you operate a small shovel like this or the biggest dragline, you'll find a Tiger Brand Wire Rope designed to give the best service in each application.



Outstanding performance month after month in jobs like this proves the superior quality of Tiger Brand Wire Rope. But if you have a special application that's tough on wire rope, call in a Tiger Brand Field Service Engineer. He'll help you select the best rope for your particular needs. In the meantime write for our handbook, "American Tiger Brand Wire Rope."

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO · TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM, SOUTHERN DISTRIBUTORS
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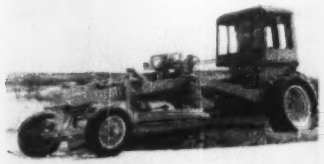
USS TRADE MARK

AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

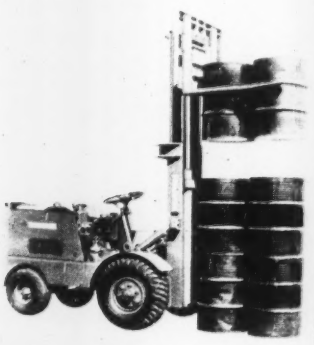
UNITED STATES STEEL

studs, with ample clearance for standard thickness door. Flo-Dor mechanism slides into grooved base plate and is locked in position with one screw. —Flo-Dor, Inc., 8851 Exposition Blvd., Culver City, Calif.



Grader Has 12-Foot Blade

Large 12-ft blade on Model 900 motor grader is redesigned for greater angularity and pitch making it possible to cut 3-ft ditches with proper sloping action. This 12,000-lb grader is powered by a 50-hp Minneapolis-Moline gasoline engine. Wheelbase is 16 ft 4 in. The 900 is completely hydraulic. Attachments include: Low-lift material-handling buckets, bulldozer, vertical moldboard, 9-tooth scarifier, V-type or reversible snow plow, Hi-Lift loader, and snow bucket. —American Road Equipment Co., Omaha, Nebr.



Hydraulic Drum Forks

Handling of steel drums without pallets is simplified by use of Towmotor's hydraulic drum forks. The right hand fork can be moved laterally by a double-acting hydraulic cylinder, allowing forks to pass to either side and below the upper rolling rings of the drums. Concave notches on inside edges of the forks make close contact with sides of drums when movable fork is closed.—Towmotor Corp., 1226 E. 152nd St., Cleveland 10, Ohio.

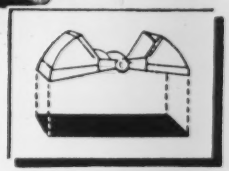
Hydro-Throttle Control

Truck engine throttle control automatically regulates speed of engine when operating equipment from a

(Continued on next page)

ERIE *Barge Type* Bucket

In this type the large deck area achieved means bigger payloads in stock piling and barge rehandling work. Erie's booklet on 2-line buckets gives you complete data on this type and 3 other classes of Erie Buckets. Write for copy today.



Compare DECK AREA

¾ Yd.	27.21 Sq. ft.
1 Yd.	30. Sq. ft.
1⅛ Yd.	32.3 Sq. ft.
1½ Yd.	38.7 Sq. ft.
1¾ Yd.	42.4 Sq. ft.
2 Yd.	45.1 Sq. ft.
2¼ Yd.	53.5 Sq. ft.
2½ Yd.	57.6 Sq. ft.
3 Yd.	60.9 Sq. ft.

Write for Catalog 2L-1 *Today*

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STEEL CONSTRUCTION COMPANY
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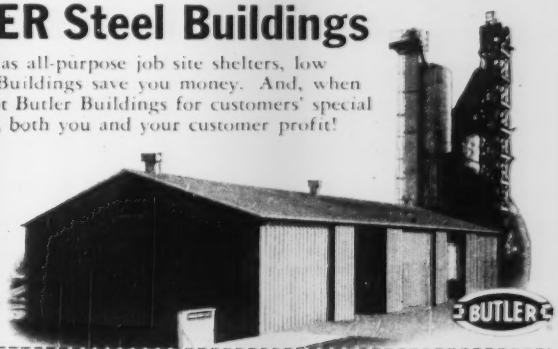
To Brighten Your Profit Picture,
See Your Local Distributor of

BUTLER Steel Buildings

Used as all-purpose job site shelters, low cost Butler Buildings save you money. And, when you adapt Butler Buildings for customers' special needs, both you and your customer profit!



Butler Building used by a Kansas City, Mo., construction company

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WAGON DRILL

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AT SPEEDS AS SLOW AS
2 INCHES PER MINUTE

CONTROLLED FEEDING . . . rapid return . . . *infinitely variable* slow or fast travel to meet ANY drilling or maneuvering need . . . under ANY conditions . . . Rig is COMPLETELY MANEUVERABLE—drills in ANY direction on ANY terrain . . . Tests prove Thor 4" Drifter is powerful enough to outdrill anything in its class! Tests run on your job at our expense—call your Thor distributor or wire Independent Pneumatic Tool Co., (Thor Tools), Aurora, Ill.

Write Today
For Thor
Wagon Drill
Circular

BUY IT *from your* DISTRIBUTOR

... Thor PORTABLE POWER TOOLS
ELECTRIC • PNEUMATIC

power take-off. As pressure from power source increases, piston on the control is forced into action to speed engine to the proper rpm. As load is stopped or pressure reduced, throttle instantly and automatically returns engine to idling speed, eliminating unnecessary racing of the engine.—Stratton Equipment Co., Hanna Bldg., Cleveland 5, Ohio.

Heavy-Duty Semi-Trailers

The Armstrong heavy-duty semi-trailers are available in capacities to 40 tons. Features include: Spring-mounted axle, safe, efficient loading by skids and stools supplied with the trailer, standard fifth-wheel mounting, standard wheel alignment, 8-ft bed width, and all models completely wired to meet highway lighting requirements.—J. D. Armstrong Heavy Hauling, Inc., Box 307, Ames, Iowa.

New Product Briefs

Replacement pistons for heavy-duty gasoline and diesel engines are made of Vanasil vanadium-silicon alloy. The Micro-X pistons feature light weight and low-expansion characteristics. Manufactured by: Gillett & Eaton, Inc., Lake City, Minn.

Medium heavy-duty gas burner is designed for use in medium-large buildings. Chore Boy Model CA is of the atmospheric type and requires no blower. Manufactured by: Standard Fuel Engineering Co., Detroit 17, Mich.

Fractional-horsepower motor combines in one unit a Varidrive that permits instant change of speed in a ratio of 1:10, and a heavy-duty Syncrogear for increasing torque. Available in ¼, ½, and 2-hp sizes. Manufactured by: U. S. Electrical Motors, Inc., Los Angeles 54, Calif.

Rubber-lined valve provides resistance against abrasion and erosion in control and tight shut-off of either slurries or dry pulverulent materials in air-transport pipe lines. Manufactured by: R-S Products Corp., Philadelphia 44, Pa.

Welding gloves in three new styles are available from Air Reduction Sales Co., Inc., New York 17, N. Y.

Continuous Research and Development at **Amcreco**

means longer life and less maintenance

Amcreco
Lowry Process
Creosoted Products

Timbers • Piles • Planking
Framed Bridge Timbers
Adzed and Bored Cross Ties • Bridge Ties
Poles • Cross Arms • Conduit

The ever-increasing life expectancy of Amcreco Creosoted Products is no accident. It is the direct result of continuing research and development at Amcreco. With the tried and proven Lowry pressure creosoting process as the foundation, refinements and improvements in treatment techniques have in many instances doubled and even tripled service life in the space of the last 25 years.

Backed by this progressive program Amcreco Creosoted Products are your best assurance of long life and minimum maintenance. For greater all-around economy on your next job, specify Amcreco.

Pressure-treated for strength that lasts!

AMERICAN CREOSOTING COMPANY
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LOUISVILLE, KENTUCKY

2.6 times as much as Heiliners!

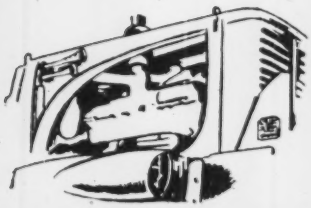
Proof that Heiliners move more dirt faster..at less cost!

124 pay yards per 50-minute hour as against 47.5 for competitive units! That's the kind of performance Heiliners delivered on a highway fill job 12 miles northeast of Madison, Florida.

Work involved borrow-pit excavation of typical Florida sand mixed with clay and having no boiling action. Bearing pressure was low — 15 lb. to 17 lb. per square inch. Hauling distance was 2000 feet one way.

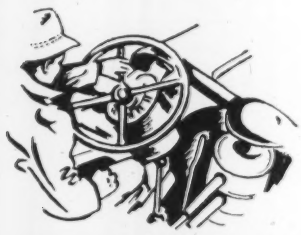
The Heiliners loaded 14 pay yards in approximately the same time as other makes of scraper units on the job load-

A few of the reasons your Heiliner operator makes a good showing!



200-hp Cummins Diesel

High top speed (25 m.p.h.), plenty of lugging power. Compression release for quick starts.



Easy-handling Hydro-Steer

Makes steering effortless. You can turn the Heiliner with one hand in a 22-foot radius.

Way down upon the Swanee, this Heiliner 2C-800, powered with a 200-hp. Cummins Diesel, is busy slashing earthmoving costs. Heiliners are available with either an 18-cu. yd. scraper as shown, or a 20-cu. yd. bottom-dump wagon—both are interchangeable.

ed 8½ yards. The Heiliners pulled away from the pushers under their own power. The other units had to be pushed out of the borrow pit to the haul road. On the roadway fill, the Heiliners made a 6" spread in third gear with no pusher help. The others had to be pushed in first gear.

The extra traction, extra speed, and bonus loading of Heiliners are paying out on jobs all over the country. Put these Heiliner advantages to work for *you*. Have your Heil road-machinery distributor demonstrate the Heiliner. Write today for bulletin.

THE HEIL CO.

Dept. 180, 3001 West Montana Ave., Milwaukee 1, Wisconsin
Factories: Milwaukee — Hillside, N. J.

District Offices: Hillside, Washington, D. C., Atlanta, Milwaukee, Detroit, Chicago, Minneapolis, Kansas City, Dallas, Los Angeles, Seattle R-117

Adjustable Control Levers

Adjustable to suit operator's convenience. Puts the smooth-running Heiliner cable power control-unit within finger-tip reach.

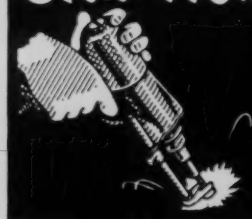
Comfortable Seat

Reduces operator fatigue, by absorbing the shocks in rough going.

Good Visibility

No obstructions block operator's vision ahead or behind. He can always see how he is doing

Stud Welding gets it On!



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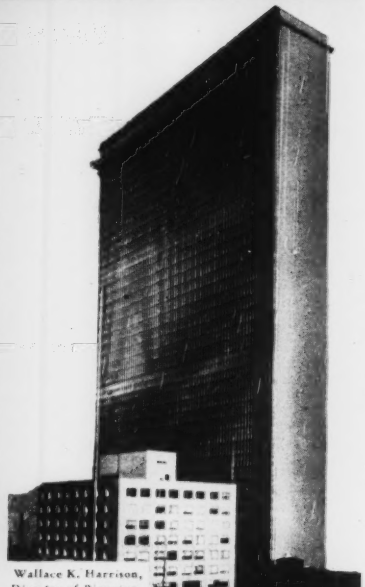
FASTER
AT LOWER COST



Wallace K. Harrison, *Director of Planning*
Fuller-Turner-Walsh-Slattery, Inc., *General Contractors*

U. N. Building's 5400 Windows Secured with NELSON STUDS

Use of trigger-quick stud welding for installing floor-to-floor aluminum window frames in the spectacular U. N. Secretariat Building eliminated the necessity for drilling and tapping approximately 5,000 holes. Short steel I-beam sections, cast in concrete, serve as anchorage for the Nelson flux-filled studs which secure the frames at the ceiling and floor.

Whenever a material's to be fastened to steel, use the Nelweld method and do the job better, faster, at lower cost.

Roofing and siding materials—corrugated steel, aluminum, protected metal and asbestos-cement—are installed at substantial savings with Nelson stud welding. Installation is stronger, neater and safer by this remarkably fast topside method which is now recommended by leading material manufacturers.

No capital investment required—Nelson stud welding equipment may be rented, at small cost, from Nelson Authorized Dealers. Nationwide field engineering service.

SEND FOR BOOKLET
"Nelson Stud Welding in the Construction Industry"

NELWELD

Nelson Stud Welding
DIVISION MORTON GREGORY CORPORATION
2762 TOLEDO AVENUE . LORAIN, OHIO

Manufacturers' Publications

Refraction Seismograph—Use of a portable refraction seismograph for determining thickness of overburden and depth to bedrock is described in this 8-p catalog. Each component part of the system is described in detail including the oscillograph, amplifier control unit, seismometers, and cable and reel. The catalog describes the procedure to follow, and shows the results of a typical test.—CENTURY GEOPHYSICAL CORP., 1333 N. UTICA ST., TULSA 10, OKLA.

Forms for Concrete—Kenney plastic-faced forms for concrete construction are described in a 4-p folder. Also described are the Type A all-steel forms, and plywood-faced steel forms. Complete information is provided on erection procedures. Feature of the catalog is a listing of 12 reasons for recommending the Kenney forms.—CONSOLIDATED CONCRETE FORM CORP., P. O. BOX 96, TEANECK, N. J.

Construction Materials—General Bulletin MCC-1 briefly describes Atlas' complete line of chemical construction materials including: Corrosion-proof linings, corrosion-proof cements, acid-proof brick and tiles, corrosion-proof brick sheathing, corrosion-proof protective coatings, and corrosion-proof floors. Handy estimating data are included.—ATLAS MINERAL PRODUCTS CO., 42 WALNUT ST., MERTZTOWN, PA.

Elevated-Tank Pump Controls—Pressure-operated pump controls for elevated-tank systems are described in 4-p Bulletin 1200. This bulletin outlines applications of Mototrols, shows their construction, and explains how they work. Operation of the Antocon Twin Bellows design for accurate control is described in detail.—AUTOMATIC CONTROL CO., ST. PAUL 4, MINN.

Hose Couplings; Fittings—Catalog section (12 pp) describes Goodrich hose couplings and fittings of various types. The catalog section pictures and provides details on each type of coupling and fitting, together with specifications, general and maximum pressure recommendations, and a description of threads.—THE B. F. GOODRICH CO., AKRON, OHIO.

Underfloor Duct System—Booklet 18-120 UF describes in detail the most expedient manner for laying out and

estimating Fiberduct underfloor distribution systems. It contains pertinent information on where and how to use Fiberduct, how to lay out a duct system, how to make a materials take-off, and installation procedure. Handy formulas and step-by-step procedures for estimating and figuring materials simplify calculations. — General Electric Co., Construction Materials Dept. News Bureau, Bridgeport 2, Conn.

Ball-Bearing Swivels—Fifteen different types of end connections and 9 swivel capacities ranging from 250-lb to 46,200-lb working loads are described in this illustrated booklet. All Miller swivels have a safety factor of 5:1. The catalog describes the features of the Miller line including: Turn freely under maximum stress; remove kinking and twisting when line is heavily loaded; and eliminate spinning of load. —General Machine & Welding Works, Pomona, Calif.

Torque-Converter Tractor—Features of the HD-19 crawler tractor with torque-converter drive are explained in this 24-p catalog. The catalog contains a precise, complete, and simple discussion of the torque-converter drive. One full page is devoted to operators and servicemen. A 2-p spread introduces a full line of allied equipment for the HD-19. Another page is devoted to special accessories.—Allis-Chalmers Mfg. Co., Tractor Div., Box 512, Milwaukee 1, Wis.

Concrete Mixers—Two catalogs are announced by Worthington. Bulletin R-217A describes the Worthington-Ransome Blue Brute 11-S and 16-S concrete mixers. Bulletin B-1700-B2 describes all current models of Worthington-Ransome Blue Brute big concrete mixers. Both bulletins are replete with details and photographs of these mixers in use. Attachments and accessories are also described. — Worthington Pump & Machinery Corp., Ransome Construction Equipment Sales Div., Dunellen, N. J.

Panel Construction Data—Manual covers Cemesto design and construction application data for building low-cost insulated buildings. Booklet contains 40 pages of detailed drawings, data, and other information. Cemesto board is a structural insulating panel unit consisting of a core of laminated cane-fiber insulating board surfaced on both sides with light grey cement-asbestos boards bonded with moisture-proof, highly vapor-resistant bituminous adhesive.—The Celotex Corp., 120 S. LaSalle St., Chicago 3, Ill.

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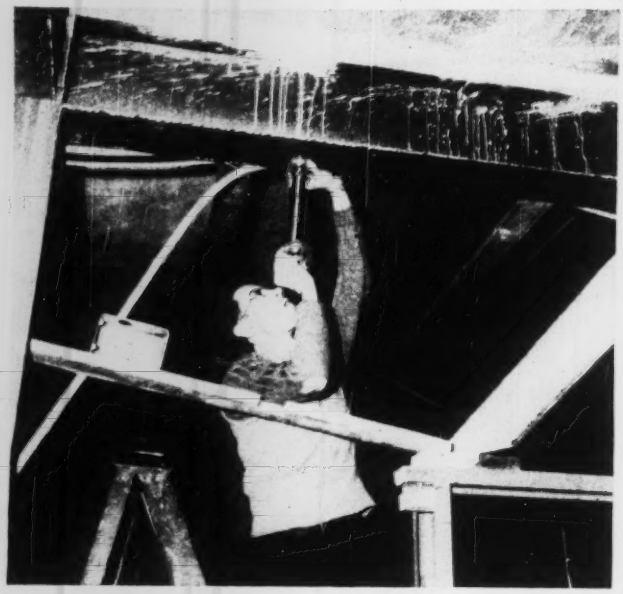


Rules make explosive-powered tools safer

The trouble is that explosive-powered tools—such as are used in many forms of construction work to drive rivets and studs are, in reality, modified guns. And guns are always dangerous, particularly around busy, crowded construction jobs.

Of course, the tools aren't new—they were used extensively during the war—and they do an excellent job when properly handled. But, in 1949, three California workmen were killed and 23 disabled while using them.

• **Unions stepped in** — California labor unions took a serious view of the situation—serious enough to pass a resolution that their members were not to use the tools unless the state Department of Industrial Relations, Division of Industrial Safety, would approve them as safe.

That brought the already worried manufacturers into the picture—and it brought into play a little-known but extremely effective device set up by the state and adhered to by all concerned—the action of the Industrial Safety Division.

• **How it works**—What happens is this:

The Industrial Safety Division meets with manufacturers and labor, inspects the tools in question, promulgates a standard.

The standards are widely circularized. Then, if a division inspector stops at the job and finds the standard not being lived up to—or if he receives complaints from workmen—compliance order is issued. Failure to comply can mean fines or jail sentences, or both.

(There have been few, if any compliance orders issued. In most cases, manufacturers, employers and labor are genuinely working together—want the standards and will follow them.)

• **Spelling it out** — In detail, the standard approved by the Safety Division, defines an explosive-powered tool as "a tool depending on an explosive charge to provide the driving force, that is usually held in the hand when used for driving studs or pins (usually metal) into other objects."

It specifies that only qualified personnel—at least 21 years of age or apprentices in the final period—may operate these tools. And in order to be called qualified, the operator must be able to disassemble, clean and reassemble the tool, explain the function of each part, demonstrate ability to use the tool safely under a variety of conditions and explain the manufacturer's rules for safety and care. (Manufacturers are cooperating by issuing certificates of competency to operators—after tests—and the state is accepting such cards as evidence of competency.)

The standard also prescribes that the tools shall not be used without a securely fastened protective shield near the muzzle, and further orders that after next Jan. 1, such shields shall be permanently attached to the tool, in such a manner "that the tool cannot be fired without the shield or attachment."

Other provisions of the standard outline methods of inspection after each use, storage of tool and cartridges, position of tool during use, what materials it may be used upon, eye and face protectors required, and prescribe that large signs proclaiming that the tools are being used be posted on the job.

Evidence of how seriously the division takes the inherent danger in the tool is a paragraph concerning handling:

"When loading, the tools shall be handled like firearms. Hands (shall be kept) clear of the open barrel end; barrel end pointed away from workers, especially when barrel end is being screwed into operating position. No unattended tool shall be left loaded."

• **It works**—There's plenty of reason for the standard to work, of course. Manufacturers found that they were having a hard time marketing their products, because employers wouldn't use it, if their labor was worried about the danger.

The manufacturers are well aware that the advantages gained by the use of these tools can be completely obliterated by even a single serious injury. They have, therefore, tried to make them as fool-proof as possible by adding many types of safety devices. These usually take the form of a safety lock that prevents accidental setting off of the explosive charge. In most cases, it is necessary that the handle be twisted to 90 deg. from its normal position before the charge can be fired. This eliminates "trigger-happy" discharge, and accidental discharge should the tool be dropped after it has been loaded. The piston holding the stud to the cartridge is designed to minimize the possibility of a ricochet.

Here, then, is a means of self-regulation pioneered in California that works—because all parties want it to work, and all have faith in the judgment of the experts of the state's Division of Industrial Safety.

Raymond

MAKES 5 TYPES OF CONCRETE PILES

1. STANDARD . . . 2. STEP-TAPER . . . 3. PIPE STEP-TAPER

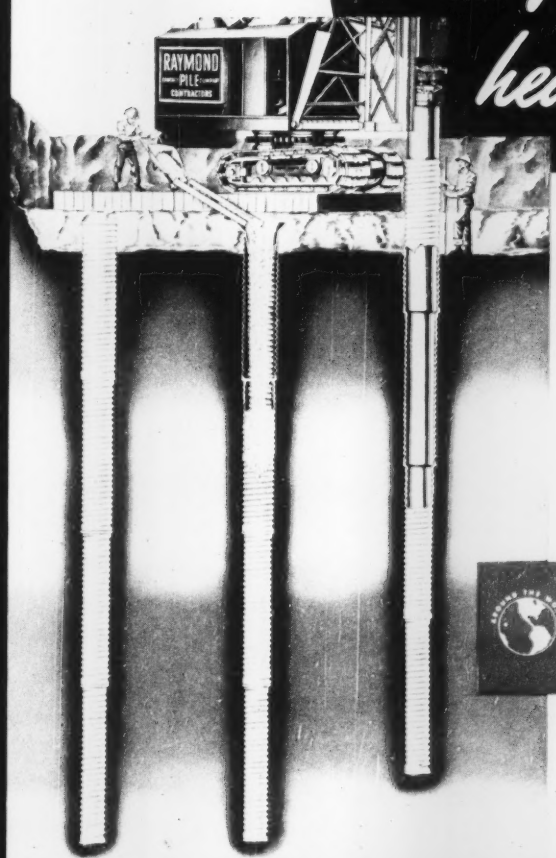
4. COMPOSITE . . . 5. GOW CAISSONS

Raymond installs every type of pile: cast-in-place concrete, pre-cast concrete, steel pipe, wood and H-beam. Raymond operations include underpinning, borings and soil investigations, waterfront construction and harbor and river improvements, also cement mortar lining of pipes by the Centriline Corporation, a Raymond Subsidiary.

At left, completed Step-Taper Pile is tested, using the permanent steel shell with concrete after internal inspection. Right, driving the pile with cold core.

2. STEP-TAPER PILES

FOR *long lengths* WITH *heavy loads*



Raymond Step-Taper Concrete Piles driven with rigid steel cores and heavy hammers are designed to develop high load-carrying capacities at depths to 80 feet. The permanent steel shell maintains the resistance developed during driving. After the shell is inspected internally, it is filled with concrete and cut off at the specified elevation.

You are invited to discuss with our engineers the efficiencies and savings made possible by Raymond's exclusive, original concrete pile designs.

◀ RAYMOND PILES MAINTAIN DRIVING RESISTANCE

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How to keep a shovel from digging up trouble

THIS Marion 151-M shovel is designed for heavy-duty jobs, like stripping away hard rock overburden. It takes 6½ cubic yards at a bite with practically no time-out for maintenance.

One reason for this shovel's stamina is Timken® tapered roller bearings at all these vital points:

Hoist drum shaft
Intermediate hoist shaft
Motor extension shaft
First intermediate propel shaft
Boom hoist worm shaft
Boom point sheave dragline

Timken bearings take the heavy shock loads, with capacity to spare. They keep gears and shafts in proper alignment, preventing excessive wear. They insure long life and trouble-free operation.

Timken bearings take both radial and thrust loads. Because they have line contact between rollers and races, Timken bearings have extra load-carrying capacity. True rolling motion and incredibly smooth surface finish practically eliminate friction.

Maintenance and lubrication are reduced because Timken bearings permit tighter closures which effectively retain lubricant. Under normal usage, Timken bearings last the life of the machine because they are (1) carefully engineered for the job, (2) made of Timken fine alloy steel, and (3) precision manufactured.

Timken bearings in your product help build greater customer acceptance. When you specify tapered roller bearings, specify "Timken". And when buying new equipment, always look for the trade-mark "Timken" on the bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

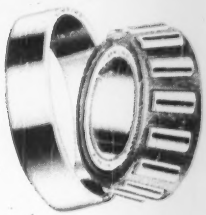
TIMKEN BEARING EQUIPPED — *The symbol of a finished product means the bearings are the best.*

MARION POWER SHOVEL CO. *uses Timken bearings on hoist drum shaft as shown here, as well as at five other vital points listed above.*

"BE SURE TO VISIT US AT
THE METAL MINING CONVENTION
AND EXPOSITION,
SALT LAKE CITY, UTAH
BOOTH 33"

TIMKEN

TAPERED ROLLER BEARINGS



NOT JUST A BALL NOT JUST A ROLLER THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION